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AMERICAN ARTISAN and Hardware Record

VOL. 75 No. 18. CHICAGO, MAY 4, 1918. $2.00 Per Year.

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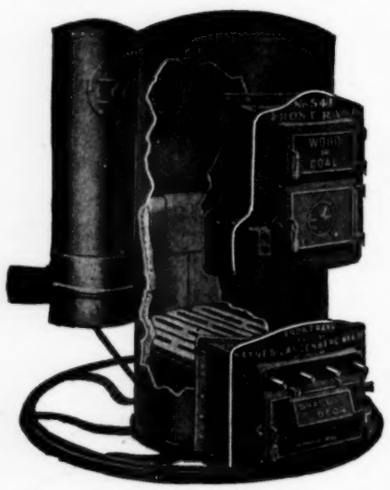

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Help Get More Men For Ships

AMONG THE patriotic tasks which American citizens are now called on to perform there is one which stands out with exceptional urgency and insistence. Its prompt fulfillment is of vital importance to all of us—from the point of view of common, every-day interests, as well as from that of the safety of our country, of our Allies, of democracy and of liberty. This task is the prompt supplying of the vast ocean tonnage which is required for moving to the battle line our troops, with their munitions, food, motor trucks, aeroplanes, ambulances, and other equipment, and for the transportation of food and other necessaries to our Allies.

It is needless here to rehearse the conditions which have delayed until the eleventh hour the building of these vessels, without which the assembling and training of our soldiers and the gathering of food, munitions and equipment will be in vain. The vital fact today is that the crucial moment has arrived—that we, and our Allies, stand in imminent danger of losing the war, unless ample ocean transportation facilities are immediately provided.

Viewed in a narrower light, the shortage of ocean-going bottoms, if not promptly remedied, will create for American producers and distributors problems even more serious than those of recent development which have aroused such general complaint and misgiving. Every industrial plant throughout this country is running to the full extent that its supplies of fuel and labor will permit. The output of these plants makes an enormous aggregate. If ships are lacking, a vast proportion of that output, intended for shipment to our army and our Allies, will pile up in the manufacturing plants, on the railroads and at the seaboard. In such case, curtailment of production would, of course, become essential. Men and women workers in numerous centers would be thrown out of employment, the rich and well-to-do would suffer loss of dividends, and stagnation of business would speedily follow.

The question of whether we are going to allow our country to become a German province has now to be answered. And it must be answered by ships, and ships, and more ships. It must be answered now—at this moment. We have got to decide instantly whether we are going to live up to our promises to our Allies—to England and her colonies, that are putting their last men into their armies; to France, that is in desperate straits; to Italy, which has so bravely pulled herself together after an almost withering defeat.

Without ships we cannot win the war; we cannot justify the faith with which our Allies honor us. Wanting ships, we can send no more men to the battlefield; we cannot even maintain the American soldiers who have reached the other side and who depend for their very lives on the support of their fellow-citizens at home. To build ships we must have men. Our shipyards will need, must have, 250,000 workers. This is the urgent call made by the federal government. Blacksmiths, boilermakers, carpenters, electrical workers, foundrymen, machinists, plumbers, structural iron-workers and men of numerous other trades, besides draftsmen, clerical workers and laborers, must be supplied at once.

You, as a merchant, whether you are at the head of a big store or of a small one, have exceptional means for bringing the facts strongly into the consciousness of the public. You are in close touch with your community. You have special facilities for conveying information to your fellow-citizens. You can certainly use your display windows to impress the public with the vital facts of this present moment, just as thousands of stores throughout the country have done in connection with the Liberty Bonds, the conservation of food, and the distribution of War Savings Stamps.

Many retailers can use a portion of their advertising space to impress the public with the urgent need for workers. In many stores, again, changes can be made that will directly help in supplying workers for ship construction. In several centers, in order to release men, the retailers in various lines, working in unison, have gained the co-operation of their public in minimizing deliveries. If you and your neighbors have not yet taken measures of this character, delay no longer. Begin at once to put your store on a war basis.

To bring home to the people of your community the urgency of the need of men for our shipyards, use your influence wherever it promises to be effective. Get the editors of your local newspapers to spread the news that these 250,000 workers must be enrolled without delay. Encourage the officials of your city or town to make known the facts, by proclamation, mass meeting, or otherwise. Personally urge service in the shipyards on every suitable man with whom you come in contact. Then ask the employers of labor in your city and vicinity to induce as many of their men as possible to devote their hands and brains to speeding up the production of ships.

Note that the men required are not asked to give up their jobs and move somewhere else immediately. That would cause confusion. What is asked is that

every man who stands ready to go to work building ships when the United States Shipping Board asks him to shall now enroll in the United States Shipyard Volunteers of the Public Service Reserve. Such enrollment will include registration and an examination as to fitness for the work. Application for enrollment can be made at any office of the United States Employment Service, and such offices are now being established all over the country.

If there is no enrollment agent of the Public Service Reserve in your community, ask the prospective ship-building worker to see the local representative of the State Council of Defense, or he may write to Edward N. Hurley, Chairman, United States Shipping Board, Washington, D. C.

Especially make it clear that men of all trades who can work in wood, iron or steel with a fair degree of skill will be welcomed by the Government and by the Shipping Board, so long as they are willing to serve with faith, loyalty and perseverance. Make it plain, too, that since workmen in our shipyards today are absolutely vital to our military success, those who answer the call will be just as truly defenders of our country and its Allies as are our soldiers on the fighting front.

MUCH MISUNDERSTANDING is current concerning the purpose and function of the Liberty Loan Bonds and their relation to the general finances of the country. The man who subscribes for a Liberty Loan Bond and gets credit as a patriot for doing so is not acting patriotically if he immediately sells that bond, that is, unless he imperatively needs the money, says Secretary McAdoo. It is not the mere subscription that helps the Government; it is the actual loan, Shifting the bond to some one else does not help.

Says Hold the Liberty Loan Bonds.

The same objection lies to exchanging Liberty Loan Bonds in trade. Merchants offering to take Liberty Loan Bonds in exchange for merchandise are doubtlessly actuated by patriotic motives, but such transactions tend to defeat a primary object of the bond sale, the encouraging of thrift and the discouraging of expenditures. Bonds so exchanged are in most cases immediately sold on the open market, which tends to depress the market price and affects adversely the sales of future issues. Secretary McAdoo expressly states that there is no desire on the part of the Government to prevent or interfere with legitimate trading, in good faith, in Liberty Bonds.

It is one of the great objects of the Treasury Department to have these bonds held as permanent investments by the people and paid for out of savings, thus at once providing funds for the Government and conserving labor and material.

There are the soundest reasons for holding Liberty Bonds. Their quotations under par on the stock exchange means a loss only to those who sell. The financial history of the United States shows that in times of peace all of its bonds have gone above par, some as high as 139. The tremendous growth of our resources and of our trade, our domestic trade alone having increased from thirty billion to sixty-four billion dollars in the last four years, warrants the belief that our government bonds are the soundest investments in the world and with the restoration of peace conditions will command a handsome premium in the market.

IN TIMES OF PEACE a wise man will refrain from giving expression to his opinions on matters concerning which he is not fully informed. In times of war he will be doubly cautious in his utterances. The present world conflict is so titanic in its proportions and it embraces so great a multiplicity of absolutely new problems that no sane thinker will attempt to indulge in criticism of our Government without devoting long and thorough study to the subject. We need a united mind to win the war. Governor Gardner of Missouri has stated this necessity so tersely and convincingly that the Committee on Public Information, Washington, D. C., desires that his words be given nation-wide publicity. They are as follows:

It's Wise to Avoid Criticism.

The people of this Nation are firmly convinced of the absolute justice and stern necessity of the war we are now waging, and know full well that the perpetuity of our form of government and the preservation of those rights which the Government guarantees them depend upon a decisive victory upon the battle field for the United States and her allies.

They realize the seriousness of the situation, the strength of their foes, and the enormous sacrifice of blood and treasure they must make in order to win such a victory. They stand ready to support the Government, or the Administration, in any measures which appear to them to be effective.

The chief aim of a belligerent nation is to assemble and make effective in the shortest time possible an amount of physical force requisite to prosecute the war to a successful termination; for the more vigorously a war is pursued the better it is for all engaged therein. As to those movements and measures relating to the prosecution of war, time is of supreme importance. The fate of a nation may hang upon an interval of an hour, a day, or a week.

These facts should be borne constantly in mind by the people of the United States when they undertake to form or essay to express an opinion as to the propriety of any order made by their President or those acting under him.

In order to win the war with the minimum amount of friction, the people must adjust their mental processes to the extraordinary conditions that exist. In passing judgment upon a policy, they must not attempt to apply the tests appropriate in times of peace. Men must not be moved to captious criticism because of personal inconveniences which they would under no circumstances be called upon to endure in times of peace. They must have always in mind the thought that the ultimate object of this war is a lasting peace; that the hardships must be endured in order that they may at the very earliest possible moment resume their normal manner of living, and enjoy again the privileges and blessings of a free government, at peace with all the world.

We must steel ourselves to endure without grumbling the hardships entailed by this war. We must possess our souls with infinite patience, and not in-

dulge in captious criticism. In forming or expressing an opinion relative to the manner in which the affairs of the Nation are being conducted, we should resolve every doubt in favor of our Government, and should not be influenced by personal or partisan ends.

The people throughout this section of America are "keeping the home fires burning." There is no difference of sentiment among them. They are determined to remain a unity in sentiment and in spirit. What they fear most of all is that selfish and designing interests may succeed in tearing down the splendid, efficient machine which the President has builded. The people out this way call the machine efficient because they know that never in the world's history has so much been accomplished in so short a time.

RANDOM NOTES AND SKETCHES.

By Sidney Arnold.

Words do not always maintain the meaning with which they are classified in the dictionaries. As they travel in the moving speech of the folk, they acquire new significances. This is especially true of the word "happiness." For many ages people believed that happiness was a matter of chance over which they had no control rather than of deliberate planning and choice. "Happiness" derives from "hap." In other terms, to be happy meant to be favored by hap, luck, or fortune. Ideas are pertinacious. They cling to us as the Old Man of the Sea cleaved to Sinbad the Sailor. It requires initiative and, often, a painful wrenching of familiar ties to tear one's self loose from their grasp. When we shall have convinced ourselves that the general concept of happiness as something fortuitous is wrong, we will be able to work out its formula for the guidance of life. Then happiness will become universally possible as one of the Fine Arts of civilization.

* * *

Samuel H. Jacobs of Fanner Manufacturing Company, Cleveland, Ohio, came into my office on a friendly visit this week and put the whole office staff into a mirthful mood with this story:

A Frenchman was waiting at a railroad station in Ireland when a couple of natives sat down beside him.

Said one: "Sure, Pat, it's down to Kilmary I've been and I'm on me way back to Kilpatrick."

"Ye don't say so," said the other. "It's mesself that's just after being down to Kilkenny, and I stop here a bit before I go to Kilmore."

"What assassins!" exclaimed the Frenchman. "Would that I were safely back in France!"

* * *

Lawyers occasionally get a dose of their own medicine and it leaves no pleasant taste in the mouth. My friend Joe Stone, Chicago representative of the Stanley Rule and Level Company, gives a case in point:

A lawsuit had arisen out of a dispute about a right of way, and the counsel for the landlord, who was the defendant, was cross-examining a venerable laborer who had testified that to his personal knowledge there had been a right of way over the disputed land since he was a boy 5 years old.

"And how old are you now?" asked the lawyer.

"Eighty-five."

"But surely you can't remember things which occurred when you were a boy of 5, eighty years ago?" said the lawyer, in affected incredulity.

"'Deed, an' I can, sir! I can mind a year afore that, when your father—auld skinflint, as we used to call him——"

"That will do. You may go," said counsel, reddening, as a titter ran through the court.

"Got an awful wallopin' frae Joan MacIntosh——"

"That'll do!" roared the lawyer wrathfully.

"For cheatin' her 2 year old lassie——"

"Do you hear? You can go, I say!"

"Oot o' the change of a thrupenny bit!" concluded the venerable witness triumphantly, as he slowly left the witness box.

* * *

Near North Tonawanda, New York, the home of the Buffalo Sled Company, two men were having an argument, as to whether it was correct to say of a hen "she is setting" or "sitting." My friend John J. Schneider of the Buffalo Sled Company was called upon to decide.

"Gentlemen," he said, "your grammatical dispute doesn't interest me at all. When I hear a hen cackle, what I want to know is whether she is laying or lying."

* * *

Some of the best liquor stories come out of Prohibition states. Here is one from my friend F. L. Nesbit of Standard Furnace and Supply Company, Omaha, Nebraska:

Some time ago an old Scot, who suffered a great deal with insomnia, was told by a "brither" of a certain cure.

The cure was greatly to Sandy's liking, for it consisted of a glass of whisky every evening before going to bed.

He tried it, and after a few nights he met his friend again, who inquired how the remedy was working.

"Mon Jock, it's a gran' cure," replied Sandy. "I'll tell ye hoo it worked. The first night I got intae bed, an' took a glass o' whisky. It was nae guid. Then I got up an' had anither yin. That didna do me muckle guid, either. Then I had anither yin, and a long drink oot o' the bottle. But I couldna sleep, so I got up an' drank the whole lot. An' as sure as ye staun there, Jock, efter that I didna gie a hang whither I went tae sleep or no."

* * *

I cannot imagine a more pleasant and satisfying commentary upon a man's character and deeds, than to say that he helped make others happy. Wherefore, I like the spirit of the appended lines:

His Smile.

He wasn't rich as dollars go,
He didn't have a pile of dough,
He didn't own a motor car,
He couldn't often travel far,
He couldn't dress in costly style,
He just possessed a kindly smile.

He had a happy sort of way,
Knew how to work, and how to play,
And he respected women fair,
And dealt with men upon the square,
And people thought him much worth while
Because he had a kindly smile.

AMERICAN ARTISAN

ADAM SCHEPPER.

No two astronomers observing the same star at the same time will arrive at precisely the same figures in their deductions. There is always a slight mathematical difference in their conclusions. This variation from absolute identity of results has been called "the personal equation." It represents the persistence of the individuality of the observer even in so impersonal a domain as that of astronomy. When we pass into less technical areas of human activity where the character of men is a determining factor, the personal equation becomes sharply accentuated. From a minor and practically negligible element of calculation, it develops into a force of preponderant significance. As between men of the same trade or industry, the personal equation comes most frequently into play in signalizing a particular man and differentiating him from others apparently equal to him in equipment, diligence, and purpose. Thus, though we know that hundreds of clever civil engineers contributed toward the success of the Panama Canal, that marvelous achievement is personified for us in Goethals. Offhand, few of us could name the great scientists who have worked out the technicalities of electricity, but everyone associates the name of Edison with its practical applications. And so through a lengthening list of human achievements run the personalities of men and women whose characters stand out vividly from the mass of their fellows.

Less notably perhaps than in the case of people of high fame but, nevertheless, with undeniable finality, the men who have forged into prominence in the industrial development of our country have been possessed of the same distinguishing qualifications. What is true of the larger activities is true also in corresponding measure of the less conspicuous walks of life. It may seem a far-fetched comparison to connote the sheet metal trade with so gigantic an enterprise as the building of the Panama Canal. Yet, the same basic laws of progress are operative in both.

Since the introduction of efficiency methods in the study of man-power, it has become possible to reach comparatively accurate estimates of character and performance. Although the personal variants will always remain more or less elusive, nevertheless, we may approach the task of determining the substantial equipment of a given personality with full confidence in the trustworthiness of the results of our study. This is not the place nor do the limitations of space permit us to give a biography of Adam Schepper with the particulars of his career which justify the general view of him which harmonizes with the foregoing principles and considerations. Suffice it to say that the position which he has achieved in the esteem of his fellow contractors is amply warranted from every angle of argument.

He was born in Bay City, Michigan, the scene of his present business connections and received his education in the schools of that town. He was a model scholar. Even in his school days the managerial ability for which he is now so conspicuous manifested itself in various ways. He was the leader of his classmates in their boyish sports and enterprises. After leaving school, he became apprenticed to a tinsmith—from choice rather than necessity. His progress, therefore, in the sheet metal industry has been along lines of success both because of his natural talent and of a real liking for that particular kind of work. Today he is general manager and equal partner in the firm of Schepper and Covert, of Bay City, Michigan, copper jobbers, coppersmiths, and sheet metal workers, specializing in chemical and sugar factory work. The business men of his native city have paid a significant tribute to his commercial fitness by electing him a director of the Bay City Board of Commerce. He is, in addition, president of the Bay City Manufacturing Company; and also a director of the Bay City Auto Body Company

Always a strong believer in organization, he has taken an active part in the Michigan Sheet Metal Contractors' Association since its inception. At the recent convention of that body in Detroit, Michigan, he was elected to serve as its president for the ensuing term. In this capacity there is ample opportunity for the exercise of his executive cleverness, enthusiasm, and tenacity of purpose.

HALL OF FAME

FRANK I. EYNATTEN.

There is a law at work in the universe by virtue of which every effort in whatever direction is followed by its exact equivalent in accomplishment of some sort or other. Its operation is as inevitable for good or evil as the swing of the Pleiades through their orbit. No man or tree or blade of grass is free from its sway. Moralists of the school of Emerson call it the law of compensation. Scientists designate it as the law of the conservation of energy. All human legislation is an attempt, more or less conscious and intelligent, to embody it in the statutes governing personal and social relationship. The closer we approximate it in ethics or commerce the nearer do we come to justice. In the field of character, this law of compensation is the light by which we are able to penetrate beyond the haze of first impressions and discern the individual values which are the product of its activity.

Viewing his personality from the angle afforded by the fundamental law, we can get a fairly clear notion of such a man as Frank I. Eynatten, the newly elected secretary of the Master Sheet Metal Contractors' Association of Illinois. In other words, the position which he has acquired in life necessarily implies a given amount of conscientious endeavor intelligently directed and persistently sustained. However much men who have been disappointed in their ambitions may rail to the contrary, it is not by a fluke of chance nor through unearned influences that men of the Eynatten type reach the uplands of success.

The bare outline of his career furnishes us merely with a diagram. Yet, keeping in thought the law of compensation, we can readily sketch in for ourselves the lights and shades and colors which complete the portrait of the man. Frank I. Eynatten was born and reared in the city of Peoria, Illinois. His environment was of a kind favorable to the development of the qualities which evolved into positive action in the years of manhood. He received his education in the schools of his native town. It was characteristic of him that studied with diligence and perseverance. The old saying that "the boy is father of the man" was amply verified in the flowering of the seeds thus planted in the fertile days of youth.

Since leaving the schools, Frank I. Eynatten has held only two positions. The first was with the Commercial National Bank of his native city. He entered the employ of that institution in the capacity of messenger and continued in its service during a period of ten years. It is generally conceded that promotions in a bank are seldom made except as a reward of merit. Were it otherwise, incompetence and inefficiency would soon drive the institution into the hands of a receiver. Consequently, the fact that Frank I. Eynatten worked his way upward from messenger to clerk in the notes and discount department of the Commercial National Bank of Peoria is conclusive evidence of his ability and faithfulness to duty.

After ten years in the bank, he severed his connections therewith to join the firm of A. A. Bushell and Son of Peoria, with which he has been associated for the past eight years. It is one of the oldest roofing and sheet metal firms in Illinois, having been established sixty-six years ago, and it has grown from a small shop in 1852 to one of the largest in the city of Peoria.

It is quite logical to deduce from his character that he would interest himself in organization work among the people of his trade. Therefore, there is no surprise in the fact that he is secretary of Peoria local of the sheet metal contractors' association. His work in this regard has been so noteworthy that it attracted favorable attention throughout the state. Accordingly at the recent annual convention of the Master Sheet Metal Contractors' Association of Illinois he was unanimously elected secretary of the state organization. Unlike elections in fraternal societies, the choosing of officers for business associations is almost invariably guided by a desire to obtain the services of the most competent men, rather than by motives of friendship or sentiment. Consequently his selection for the post of secretary is equivalent to a pronouncement in approval of his business skill and talent for organization. This verdict, coming from veterans of the trade, is a more eloquent tribute to his exceptional fitness than any array of words which might be assembled in this column.

UP TO THE MINUTE NEWS SIFTINGS

CANVASS OF HOUSE OWNERS ENABLES DEALERS TO INCREASE SALES.

Stove dealers all over the country have found it practical and advisable to get a list of the prospective customers in their respective districts, and to send out advertising literature to them. Among the numerous methods used for obtaining such a list there is one which is considered especially resultful and easy of application. This method is the canvass of house owners. The stove concern has a representative visit the house owners in the district in which the stove is located. The dealer then arranges for a meeting with the house owners, if possible, and tells them his business, gives them some of his advertising literature, and receives from them the names of their tenants. It is declared that through this method the dealer is able to increase his sales to a great extent and to form a friendship both with the house owner and those who rent the flats.

ADVISES DEALERS IN STOVES TO READ LITERATURE OF MANUFACTURERS.

If there is any one line of business which requires more preparation, time, and actual study than other lines it is the business of selling stoves. From the very nature of this article it is apparent that the buyer does not make a purchase without first giving considerable thought to the kind and type of stove he wants. It is manifest, therefore, that no "bluffing" or "stalling" will be tolerated. Very often it is possible for dealers selling small articles to induce a customer to accept something he had not intended to buy, or to show him something "just as good." However, in selling stoves this is almost impossible. The customers can seldom be fooled.

Honest stove dealers do not regret that such is the case. They realize that in order to sell to buyers who have made a study of the kind of article they want, they must also study considerably. They must do a lot of planning. Progressive stove merchants, therefore are preparing already for their fall selling campaign. The many ways to study the different makes of stoves and to learn how to sell them successfully form a topic for discussion which would fill many books if treated from every angle. There is one way, however, for the dealer to learn the features of the stoves which he sells, to which we wish to call attention in this article and that is by a careful perusal of the literature sent to him by the manufacturers.

The companies that make the stoves certainly know the main features of their products. They know wherein their stoves are useful. Consequently, it is important that the dealer read their literature so that he may know what points to emphasize. In his advertising he should make use of these points and be able to explain them clearly and intelligently. He will thus be able to convince the prospective customers that the stoves which he sells are good, and he will build up a successful business.

SHOWS VARIOUS METHODS OF MAKING PIPE CONNECTIONS FOR STOVES.

As a general rule, dealers who sell stoves include installation in the transaction. It is essential, therefore, to complete service that the setting up of the stove and the pipe connections to the chimney be of such a nature as to give thorough satisfaction. In many cases—indeed, practically in all cases—the failure of a stove to work is due to faulty draft or faulty chimney or defective stove pipe connections. Consequently it is imperative that accurate knowledge be had as to the proper methods of making stovepipe connections.

The pipe leading from the stove or range into the chimney should be the same size as the pipe collar on the range. It must fit tightly, and if the pipe hole in the chimney is larger than the stove pipe, so that air is admitted around it, it must be fitted with a tight collar, or filled with cement effectually to exclude the air.

The hot air in the chimney must not be diluted with the cold air without by leaks in the chimney.

The stove pipe must be tightly fitted to the stove collar on the range, and should gradually ascend from the elbow all the way to the chimney, the elbow being apparently lower than the chimney hole.

If more than four joints of pipe are used in leading from elbow to chimney, it is best to give them a rise of from one-half to one inch to each joint of pipe.

The pipe leading from the stove or range to the chimney, should never descend into the chimney flue.

A toothpick joint, when properly applied to a sluggish chimney is often a complete remedy. When a chimney has too large a flue or a weak draft, attach this joint to your stove pipe and let it extend into the flue. Insert your hand, spread apart your fingers and at that part of the flue where the draft is strongest, fix the toothpick joint. The point in the toothpick joint should go to the center of the draft.

Many chimneys are built on a shelf, the bottom of which is but a few inches below the smoke pipe hole. The toothpick joint is essential in such a chimney to break the eddy formed in the bottom of the chimney. When the chimney is rough on the inside, causing much friction, it is best to turn up the end of the toothpick joint.

When a chimney is obliged to furnish draft for more than one stove or range, then it is necessary to use a length of pipe with a V cut in it, and with the end of the pipe blanked off. Whether the pipe holes are di-

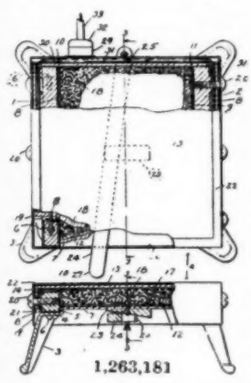
rectly opposite or not or one above the other or the pipe hole of the stove opposite the one you are putting up is higher than yours, it is necessary to cut this V with blank end in the pipe. This divides the flue and gives each stove an equal chance to operate and prevents an eddy in the chimney.

If, however, your pipe is to occupy the upper pipe hole and only one pipe enters the chimney flue, then you attach the toothpick joint to your pipe and take all the draft you can get.

When two holes are on one side of the chimney or one on one side and one on another side, but not opposite to each other, a sheet iron partition should be built between them to separate the draft. Otherwise, one of the stoves will work and the other will not. Such a partition should always be used in an undivided flue when the pipe holes are put in the flat of the chimney, even though one may be upstairs.

GETS PATENT FOR ELECTRIC STOVE.

Under number 1,263,181, United States patent rights have been granted to Stover C. Winger, Los Angeles, California, for an electric stove described herewith:


1,263,181

A flexible bottom, an insulating box resting upon the bottom, electrodes extending along opposite sides of the insulating box, carbon dust filling the box and contacting with the electrodes, an enameled hot plate resting upon the carbon dust, a wedge secured to the bottom plate near its center, and a lever mounted to engage the wedge; so that by manipulating the lever the pressure upon the carbon dust and the pressure of the carbon dust against the hot plate may be regulated.

ADVISES REPAIRING STOVES BEFORE PUTTING THEM AWAY.

This is the season of the year when housekeepers are taking their stoves apart and putting them aside until the return of cold weather. Hence, a little advice on the matter is in order. There will be a great many people who, either because of their desire to forget entirely about the many discomforts of the cold season by putting all reminders of it out of their sight, or because of their neglect will put their stoves away without any regard whatsoever of their condition The need for repairing the stoves will not enter their mind. They will say, "Oh, it isn't necessary to fix the stove now. I can wait till next winter. I'm going to put the stove aside, anyway." What will be the result? Next winter when these people put up their stoves and attempt to start a fire, the need of repairing their stoves will be brought home to them in a most uncomfortable manner. They will be unprepared for the cold weather. They will regret their neglect or carelessness. We do not make these remarks because of a desire to be admitted as members of the "Crepe Hangers' Union." Nor do we wish to boast of the ability to foretell the future. We simply do this to warn those who use stoves what may happen if they are careless and fail to have their stoves repaired before putting them away, and to advise them to get in touch immediately with some reliable stove repair company.

When trying to decide where to have the work done, it is well to remember that a company that specializes in stove repairing, and has had experience in this line will be able to give the best service. For example, it is claimed that the A. G. Brauer Supply Company, 316-318 North Third Street, St. Louis, Missouri, has been in the business of repairing stoves, ranges, and warm air heaters for the last thirty-five years and makes a specialty of this kind of work. The company declares that no matter if the stoves for which the repairs are desired are old or new, it can supply practically anything desired. Those in need of repairs for their stoves as well as dealers and all others interested, are, therefore, advised to write to the company for its latest catalog which gives information regarding a complete line of stove sundries, stove dealers' supplies and adjustable repairs for stoves, ranges, and warm air heaters.

DESCRIBES THE COOKING STOVES USED IN PARAGUAY.

Writing from Asuncion, Paraguay, United States Consul Henry H. Balch describes the cooking stoves generally used in that South American land. He says that the "stove" in universal use consists of a brick fireplace built in one side of the kitchen, on the top of which are open fire holes, over which the cooking is done. Charcoal is the fuel chiefly used. As no baking can be done on the "stove" in this form, special facilities must be provided, which usually consist of a small earthen oven built near the kitchen, or one made of metal, which is placed over the fire of the stove when baking is required.

Some homes are provided with a kind of an iron stove made in the country, which is usually built into one end of the ordinary kitchen stove or fireplace, in addition to the ordinary stove as above described.

The use of imported stoves or ranges is confined chiefly to the foreign population. Many of the foreigners, however, find it more satisfactory to use the ordinary native stoves owing to the high duty on imported stoves and because the servants of the country are accustomed to cooking on native stoves.

The official statistics of 1916 show that only three stoves were imported during the year. As each of the hardware houses of Asuncion carries several stoves, or ranges, in stock, the average number of stoves imported in a normal year must be considerably more than three. It is fairly certain, however, that Paraguay does not offer a promising market for cooking stoves, ranges, or fireless cookers.

We cannot help looking up to the man who is well dressed and who carries himself well. Appearance does help a man to create a favorable impression upon the people he meets.

THE WEEK'S HARDWARE RECORD

Of Interest to Manufacturer, Jobber and Retailer

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing western hardware and metal prices corrected weekly. You will find these on pages 44 to 49 inclusive.

The Moroney Hardware Company, Dallas, Texas, has increased its capital stock from $50,000 to $500,000.

The Union Hardware Company of Lebanon, Indiana, has increased its capital stock from $25,000 to $50,000.

The Frank Geele Hardware Company at Sheboygan, Wisconsin, has increased its capital stock to $150,000.

The Arkansas and Mississippi Hardware Company, Helena, Arkansas, has increased its stock from $25,000 to $35,000.

The Lambert Grisham Hardware Company, Henderson, Kentucky, has increased its capital from $24,000 to $50,000.

An increase of capital stock to $125,000 has been made by the Stangel Hardware Company of Manitowoc, Wisconsin.

An explosion damaged the warehouse of the Morley-Murphy Hardware Company at Green Bay, Wisconsin, the loss being estimated at $30,000.

The hardware firm of Greenhalgh and Kennedy, Greenville, Texas, has changed its name to the Greenhalgh-Kennedy Company. It was incorporated with a capital stock of $25,000 by J. F. Little, W. C. Shearer and the Messrs. Greenhalgh and Kennedy.

DU PONT COMPANY HOLDS PHOTOGRAPH CONTEST TO ADVERTISE PRODUCTS.

A plan for increased publicity which will redound to the advantage of retailers has just been put into operation by E. I. du Pont de Nemours and Company, Wilmington, Delaware. The plan consists of a photograph contest to illustrate the subjects relating to the use of the du Pont products. The subjects to be illustrated include the following:

Agricultural Use of Explosives.
Fabrikoid (Artificial Leather).
Industrial Uses of Explosives.
Painting.
Trapshooting and Hunting.

The prizes for the best photographs submitted total $500, divided as follows: First prize, $100; Second prize, $50; 2 Third prizes, $25 each; 14 Fourth prizes, $10 each; 32 Fifth prizes, $5 each. The photographs must be submitted before September 1, 1918, to the Advertising Division, E. I. du Pont de Nemours and Company, Wilmington, Delaware, full postage prepaid. Each contestant must fill out and mail an entry blank to the advertising division of the Company. Those desiring to enter should notify the Company and entry blanks will be furnished. Incidentally this contest is important to hardware dealers as it helps increase the popularity of the du Pont Products, and offers possibilities for large sales and profits to the merchant handling those products. The Company has an advertisement on another page of this issue of AMERICAN ARTISAN AND HARDWARE RECORD, containing a coupon which hardware dealers are advised to fill out in order to obtain much interesting information on the du Pont products.

TRADEMARK IS REGISTERED.

Under serial number 109,026, United States registration has been granted to the E. A. Foy Company, Cincinnati, Ohio, for the trademark shown in the accompanying illustration. The particular description of goods is lightning rods. The company claims use since February 4, 1918, and the claim was filed February 16, 1918.

109,026.

RHCO

COMING CONVENTIONS.

Arkansas Retail Hardware Association, Little Rock, Arkansas, May 7, 8 and 9, 1918. Grover T. Owens, Secretary, Little Rock, Arkansas.

National Association of Stove Manufacturers, New York City, May 8, 1918. R. S. Wood, Secretary, National State Bank Building, Troy, New York.

Florida Retail Hardware Association, Orlando, Florida, May 15, 16 and 17, 1918. Walter L. Harlan, Secretary, 44 Boulevard Circle, Atlanta, Georgia.

American Iron, Steel and Heavy Hardware Association. Atlantic City, New Jersey, May 21, 22 and 23, 1918.

Metal Branch of the National Hardware Association. William Penn Hotel, Pittsburgh, Pennsylvania, May 24 and 25, 1918. W. H. Donlevy, Secretary, 1012 Cherry Street, Philadelphia.

Southern Hardware Jobbers' Association, Traymore Hotel, Atlantic City, New Jersey, May 28, 29, 30, 1918. John Donnan, Secretary, Richmond, Virginia.

Old Guard Southern Hardware Salesmen, Traymore Hotel, Atlantic City, New Jersey, May 29, 1918. George H. Hillman, Secretary, 1402 McGavock Street, Nashville, Tennessee.

American Hardware Manufacturers' Association, Traymore Hotel, Atlantic City, New Jersey, May 28, 29, 30, 1918. F. D. Mitchell, Secretary, 4106 Woolworth Building, New York City.

National Association of Automobile Accessory Jobbers, Virginia Hot Springs, West Virginia, June 5, 6, 7, 8, 9, 10, 11, and 12, 1918. Commissioner, William A. Webster, 1813 City Hall Square Building, Chicago, Illinois.

National Association of Sheet Metal Contractors, Milwaukee, Wisconsin, June 11, 12, 13 and 14, 1918. Edwin L. Seabrook, Secretary, Philadelphia, Pennsylvania.

National Warm Air Heating and Ventilating Association, Milwaukee, Wisconsin, June 12, 1918. A. W. Williams Secretary, Columbus, Ohio.

National Retail Hardware Association, Cedar Point, Ohio, June 18, 19 and 20, 1918. M. L. Corey, Secretary, Argos, Indiana.

Hardware Association of the Carolinas, Asheville, North Carolina, June 25, 26, 27 and 28, 1918. T. W. Dixon, Secretary, Charlotte, North Carolina.

MIRANDY BRINGS NEWS TO MRS. SMITH.

"Good morning, Mirandy, how's everything to-day? What do you know that's new, strange, startling, or alarming," asked Mrs. Smith of her washwoman as she called to begin the day's work.

Mirandy worked for almost everybody in the neighborhood, and, consequently, she always had a great deal of information to impart at each house where she worked. Of course, she might not be able to tell anything about what happened at the convention of the Eskimo Whale Meat Merchants of Greenland, but it was her boast that "if anythin' done happened on dis side ob de earth dat Ah doesn't know nuffin' about, why, it jes' didn't happen, dat's all."

"Well," answered Mirandy, slowly removing her coat and hat, "dere ain't much doin' nowadays, 'ceptin' dat Mrs. Jones' eight boys done enlisted in de navy, an' Mrs. Murphy's cook done elope and got married wid a officer, an' Mrs. King's poodle dog done run away an' got losted or 'sasinated or somethin', an' my man done got put away in a cell fo' bein' so cruel to me dat I were jes' forced to hit him on de head wid a rollin' pin. An',"——

"Is that all you know, Mirandy?" laughingly interrupted Mrs. Smith. "There isn't much doing nowadays, eh?"

"By the way, Mirandy," she continued in a more serious tone, "I believe you worked at my sister's house yesterday. How is she? And how are her children, and her husband? I've been so busy that I didn't have the time to go over and visit her since last month."

"Well," answered Mirandy evasively, "dey're all pretty nicely, 'ceptin' dat, 'ceptin' dat—oh, dey're all pretty nicely. Yes, dey're gettin' along pretty finely, an'——"

"Why, Mirandy, what's the trouble?" asked Mrs. Smith, her voice betraying alarm. "Has anything bad happened at my sister's house? You talk so queerly. Tell me, Mirandy. Don't you know that I'll worry if you won't tell?"

"Well," replied Mirandy, "it ain't much. It's all ober now."

"What is it, Mirandy? Why don't you tell me?"

"I guess I done got to tell you, ma'am. But, please don't be gettin' skairt. Yo're all white now. It's nothin'. Little Willie were playin' aroun' de clothes wringer, an' he come mighty near gettin' his fingers crushed in between dem cog wheels. But they called de doctor right off, an' he sabed de little chile's han'. Everythin's all right now. Don't worry."

"It's terrible that such a thing should happen at my sister's house. She has enough trouble without that. But I certainly am glad that Willie is all right."

"Yes, ma'am. It shore am too bad for to hab' such a t'ing occurrencing. But if yo' all will pardon me fo' sayin' so, ma'am, yo're sister am pretty much to blame. Pardon me for sayin' dat ma'am, but——"

"What do you mean, Mirandy? How is my sister to blame? She surely didn't want such a thing to happen. I'm surprised at you, Mirandy."

"Oh, I know she didn't want it for to happen, but jes' de same it's her fault. Ain't I done tol' her many time prebious dat her clothes wringer weren't absolutely not good for nuffin'?"

"Well, you know, Mirandy, she paid a good deal for her clothes wringer and she doesn't feel like throwing it away and spending a lot of money for a new one."

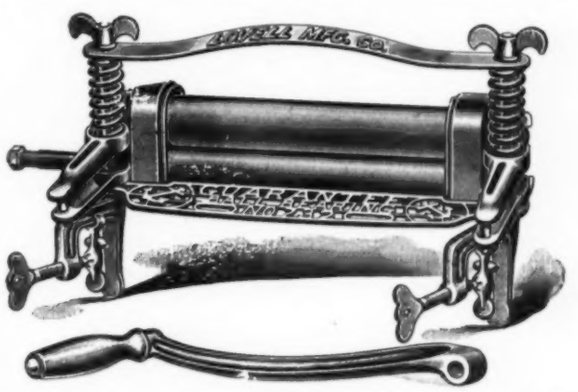
"Yes, ma'am," answered Mirandy knowingly, "dat all am wery true, but so long she done gettin' no good from de wringer, an' so long it only spoil de clothes all de time, an' so long it done hurtin' her chillun's fingers why in de worl' am de necessary fo' keepin' it?"

"Yes, Mirandy, but think of the expense of buying another wringer."

"Ain't it worth it to spen' a little mo' to sabe de chillens an' de clothes an' her healthiness? An' besides dat, ma'am, I knows a woman what jes' done bought a wringer, an' it don't cost her much, an' it am not dangerous to de chilluns, an' it can't neber spoil no clothes, an' it am guarantee fo' five years, an' I advises eberyone to get one. Yo' need one yo'self."

"What's the name of the wringer, Mirandy? Do you remember?"

" 'Deed I does ma'am. I copied it down, 'cause I knowed you needs a wringer, an' now I might gib your sister de convincement to get one. It am called de



Guarantee Anchor Brand Clothes Wringer, Made by Lovell Manufacturing Company, Erie, Pennsylvania.

Anchor brand Guarantee clothes wringer. Here, I done got a circular for you."

"Oh, yes, I've heard of it before. It's manufactured by the Lovell Manufacturing Company of Erie, Pennsylvania. I'll have my husband get me one as soon as possible. Mirandy, I certainly am thankful to you for your kind advice. I'll give you an extra quarter for your work to-day."

"Oh, dat's all right, ma'am. I likes to do favors for everybody. An' I'se pretty selfish ma'am."

"How do you figure that out, Mirandy?"

"Well, when you all gets dis here Ancho' brand wringer, it shore will be easy for me for to do your washin'," she chuckled.

MUTUAL INTEREST HELPS SALES.

Become interested in your customer's wishes and let him see this interest. Avoid every feeling or sign of indifference. Put yourself in your customer's position as much as possible without losing sight of your own. Mutual interest will accomplish much. Indifference causes lack of confidence and, hence, of sales.

EXHIBITS IN AMERICAN ARTISAN WINDOW DISPLAY CONTEST

NOVELTY OF WINDOW DISPLAY MAKES FOR LARGE SALE OF TOOLS.

"Something different!" These words have earned for themselves an undisputed right to a place in the category of oft repeated quotations. In fact, we use them so often that they are almost losing their significance. Wherefore, it is well occasionally to pause and reflect on the manner in which such a saying originates and what it signifies. It is doubtful if in the entire English language there is another saying which expresses more truly a characteristic which all human beings possess. Life would indeed be dull, uninteresting, and not worth living if we had to do the same things over and over again in the same old way, and if we had to gaze upon the same things every day arranged without any variations. We grow tired of listening to the same kind of music for any great length of time. We may admire a certain composer more than we do others, yet we would not want to hear his music only, and be deprived of that of other geniuses. We object to eating the same foods for every meal. In short, we want "something different."

It is an understanding of this trait which makes the accompanying window display so attractive. The idea in the display is a novel one. The articles on sale, namely, tools, are shown to the buyers just as they are in the ordinary, plain window display, but at the same time they are presented in a manner which is out of the ordinary, and the exhibit consequently carries an appeal. There is also a humorous touch in the display in the idea that "it takes more than a brick wall to separate a lover of tools from the" brand which the merchant is selling. The language of the burglars as shown on the cards on either side of them, is likewise odd and amusing. The display was arranged for H. D. Sterling, 4077 Utah street, San Francisco, California, and was awarded Honorable Mention in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition. It is stated by Mr. Sterling that many admirers of good tools who saw the display chuckled to themselves at the novel way in which the

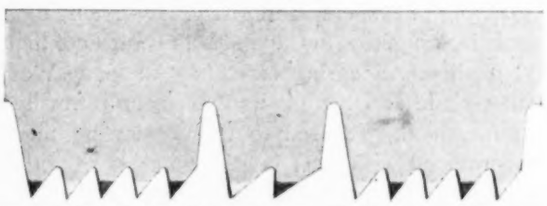
GEE! BILL,
MILLERS FALLS TOOLS
YE'R DEAD RIGHT, RED, THEM TOOLS IS SURE SOME SWAG!
IT TAKES MORE THAN A BRICK WALL TO SEPARATE A LOVER OF TOOLS FROM
MILLERS FALLS TOOLS
BRACE
Glass Cutters
Hand Drills

Window Display of Tools, Awarded Honorable Mention in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition. Arranged for H. D. Sterling, 4077 Utah Street, San Diego, California.

idea was presented to them, and showed that they agreed that nothing was strong enough to keep them away from their favorite commodity by stepping inside the store and purchasing the desired articles. It is noteworthy that the arranger did not allow his desire to make the display original to cause him to neglect placing price tags on every article. The exhibit fully deserved the success with which it met, and the arranger the many compliments which he received.

SAYS DEMAND FOR DOUBLE DUTY SAW IS ON THE INCREASE.

Reports from various reliable sources indicate that the demand for Disston Double Duty Handsaw is steadily increasing. This is said to be due to the popularity which it has already acquired among practical mechanics, as well as to the intelligent advertising which it has received. It is generally conceded that the most important of the tools in a carpenter's kit are



View of the Teeth Arrangement of Disston Double Duty Handsaw, Made by Henry Disston and Sons, Incorporated, Philadelphia, Pennsylvania.

his handsaws—one for crosscutting, the other for ripping. These are absolute essentials for general work, practice having determined that each must be individually constructed, so far as the teeth are concerned, for the particular class of work it is to perform.

While, as stated, this applies to general carpentry work, in these days of general work, concrete building operations, factories, bridges, etc., there is so much lumber used for forms and uprights, etc., that notwithstanding the employment of a portable circular sawing outfit, considerable handsaw work is entailed. The work required of a handsaw on these operations is not so much for a smooth cut as for quick cutting, and may be styled "roughing out." It involves crosscutting, ripping and mitreing or cutting at an angle, which latter partakes of both crosscutting and ripping, the lumber mostly used being North Carolina pine boards one inch thick, studding, planks and joists.

Considering these facts, it will readily be seen that in the use of two saws for the work, a rip and a crosscut, considerable time is lost during the day in picking up one, then the other, again either the rip or the crosscut saw may not be near at hand, and further, neither of these two give the highest results in sawing at an angle. Obviously, therefore, if a single style of saw were made, with teeth specially adapted for this combination of work, one giving quick action with minimum labor, having a form of tooth easily kept in order by the average carpenter, its advantages would be readily and quickly appreciated. This is precisely what has been achieved in the production of the Disston Double Duty handsaw according to the manufacturers, Henry Disston and Sons, Philadelphia, Pennsylvania. Hardware dealers are advised to write the Company for prices and details.

TELEPHONE COURTESY BRINGS PROFIT.

If there is one thing that a man resents more than another, it is the telephone grouch. Calling up an office for the purpose of transacting business, and being greeted with an impatient "Well!" is not calculated to put one in the best of humor.

The impatient voice on the receiving end—the voice that shows lack of interest and that betrays annoyance—will do more to drive away business than almost anything else. The attendant at the receiving end who does not or will not understand, who seems thick-headed or incapable is bad enough, for one can and frequently does overlook that type.

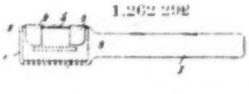
The telephone grouch, however, cannot be forgiven, for the reason that when you call, you do so in an endeavor to transact business. You are seeking by that method to increase the business of the concern you are calling, and to be greeted by an irritated person. who takes his or her spite out on you, is a little more than the average man can stand.

Occasionally telephone grouches are employed in hardware stores—the very last place in the world where they should be allowed. When a hardware clerk answers a caller on the 'phone impatiently, evidences irritation or shows lack of interest, that clerk is actually engaged in placing obstacles in the path of the company for which he works. We have in mind a hardware store, the telephone attendant of which invariably exhibits displeasure when called. He is impatient with callers, shows annoyance, is impudent, and indifferent to the business of the party who is endeavoring to place an order or obtain a price quotation. No matter how nice the empolyes to whom this attendant transfers your call may be, the lack of courtesy shown in the first place rankles.

Telephone courtesy costs nothing. It has been developed to the very highest state by the telephone companies, whose employes invariably answer politely, and always "thank you," pleasantly, though one may have spoken hastily because of a delay in getting a number. Courtesy over the telephone pays big dividends—and makes no enemies, leaves no sore spots. It increases business.

PROCURES PATENT FOR SAFETY RAZOR.

Jakob Windler, Thun,. Switzerland, has obtained United States patent rights, under number 1,262,292, for a safety razor described in the following:



A safety razor, comprising a flat guard provided on the edge with serrations and on the opposite edge with three clamping ears formed integral therewith, the two external ears being bent laterally to one side while the middle ear is bent to the opposite side of the guard, the guard being also provided with lips turned out from its body in opposite directions, a blade adapted to be held on the one or the other side of the guard in position by the clamping ears pressing it against the turned out lips keeping it at a distance from the serrations, and a flat handle formed integral with the guard and arranged in a plane therewith.

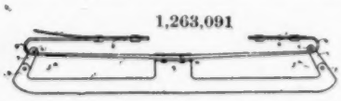
SAYS AGATE NICKEL-STEEL WARE IS STRONG AND DURABLE.

Culinary utensils that rust, break, or scale are not only inconvenient to the user, but they are likewise dangerous to the health of those who eat the foods prepared in them. A good utensil must be clean and durable. For this reason the Agate Nickel-Steel Ware utensils made by Lalance and Grosjean Manufacturing Company, 1900 South Clark street, Chicago, Illinois; New York City; and Boston, Massachusetts, are said to be of the highest quality. The accompanying illustration shows one of the products made of this enamel. It is declared by the company that the main feature of this enamel ware is that it is so hard that the fusing point is not reached until the nickel-steel, of which the articles are formed, is about ready to melt, thereby combining with the pure, vitreous composition and forming a clinch or perfect union, which no subsequent heating can destroy and which for ability to resist the action of acids is said to have no equal. The ware is also said to be strong and durable, yet light and convenient to handle. It is, according to the company, double coated with a hard covering, presenting a smooth, highly polished and beautifully mottled gray surface, very handsome in appearance, and as easily cleaned as china. It is further averred that this ware is absolutely pure and safe to use and that it is certified by the leading chemists here and abroad. In view of United States Fuel Administrator Garfield's order reducing the production of enamel-ware, dealers are advised to place their orders immediately. The company will gladly supply a copy of its latest catalog and also price lists upon request.

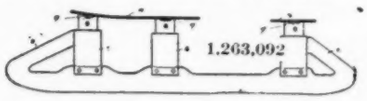
Nickel-Steel Ware Roasters, Made by Lalance & Grosjean Manufacturing Company, 1900 South Clark Street, Chicago, Illinois.

SECURES PATENT FOR ICE SKATES.

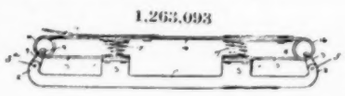
Under numbers 1,263,091; 1,263,092 and 1,263,093 United States patent rights have been granted to Elijah Misener Miers, Wiarton, Ontario, Canada, for three styles of ice skates described in the following:



Number 1,263,091: A spring skate comprising a runner-blade, a central vertical supporting member, and upwardly-extending hinged arms, a spring extending the length of the runner-blade, secured at its center to the central supporting member and having its end bent inwardly and over the main section of the spring and provided with slots in its bent ends to permit of the play of the hinged arms, and sole and heel plates secured to the bent-over ends of the springs.



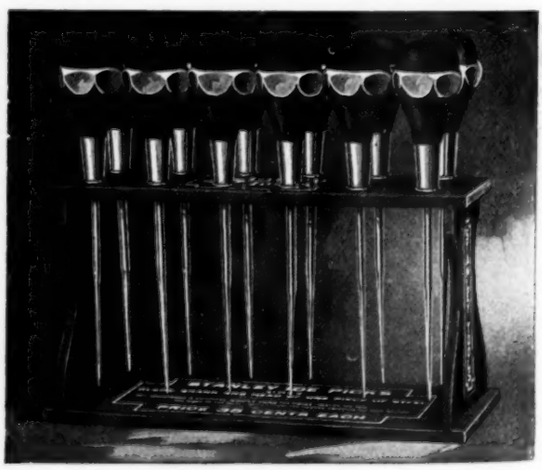
Number 1,263,092: A spring skate comprising a runner-blade, twin vertical sockets rigidly connected to the front portion of the runner-blade, a vertical socket rigidly connected to the rear portion of the runner-blade, hollow plungers having vertical play within the front and rear sockets, a sole plate rigidly connected to the front twin vertical sockets, a heel plate rigidly connected to the rear vertical socket, and springs secured at their upper ends to the sole and heel plates, and at their lower ends to the socket floors, and having vertical play within the plungers and sockets.



Number 1,263,093: A spring skate comprising a runner-blade having vertical supporting members and upwardly-extending end members, hinged arms upon the upwardly-extending end members, a spring extending the length of the runner-blade and having its ends bent inwardly and underneath and secured to the supporting members and provided with slots in its bent ends to permit of the play of the spring and said hinged arms, and sole and heel plates secured to the spring.

SALE OF ICE PICKS IS COMMENCING.

Although "King Winter" carried on a terrific bombardment against the forces of the fair queen Spring, in the attempt to occupy positions which belonged to the queen and her people, his supreme efforts came to naught. In vain did he advise his commander-in-chief, General Blizzard, to show no mercy, not even to women and children, and to bury the enemy under with the fire of his devilish snow guns, hail grenades and the poisonous gas, wind. Justice triumphed, Right prevailed over might. Winter's army was annihilated. The attacks were swept aside by the mighty counter blow of Spring's army, which remained in the dug-outs until Winter's troops became exhausted, and then went over the top in what



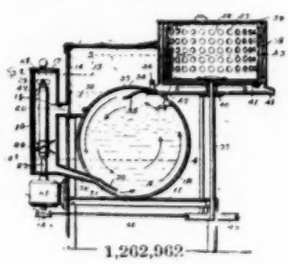
Stanley Ice Picks, Made by Stanley Rule and Level Company, New Britain, Connecticut.

will be recorded on the pages of history as the great Spring drive for freedom from tyranny.

But to come away from the realms of imaginative kings and back to real life, warm weather is here to stay. There is good reason for hardware dealers to remember this fact. There are certain articles which come into demand with the approach of the warm season. It is incumbent upon the dealer, therefore, to take in a supply of these articles and be prepared to partake in the profits obtainable therefrom. One article which is now beginning to be sold in large numbers and whose sale will become much greater in the next few weeks is the ice pick. Hardware dealers should not lose sight of the fine sales prospects in that article, but should take in a stock and make the fact known immediately. And while they are thinking of ordering a supply it is important for them to remember that ice picks that break, or otherwise prove their inefficiency will not obtain for them the good will of their customers and will hinder them in building up a prosperous business. They should handle strong and serviceable ice picks or none at all. Such an ice pick, for example, as the Stanley Ice Pick, a dozen of which are shown in the accompanying illustration, is said to be of great value to the dealer as a sales producer. This ice pick is manufactured by the Stanley Rule and Level Company, New Britain, Connecticut, and is claimed by the manufacturers to give satisfaction in every respect. It is stated that this ice pick is strong and sharp, and that it will last for a good length of time even under strenuous conditions. Full information regarding this ice pick will be cheerfully supplied by the manufacturers to all dealers who write to them.

ASSIGNS PATENT FOR WASHING MACHINE.

Under number 1,262,962, United States patent rights have been granted to George W. Lewis, Grinnell, Iowa, assignor to the Grinnell Washing Machine Company, Grinnell, Iowa, for a washing machine described herewith:



A washing machine comprising a substantially cylindrical clothes container with its axis arranged horizontally, the top of said container being open, a hinged perforated cover for the top, the perforations therein extending to a point below the interior of the top so that water moving through the container in a circular direction around a horizontally arranged axis will pass out of the container through said perforations, a deflector connected with the hinged cover adjacent to the perforations, an upright chamber at the side of the clothes container, communicating at its upper portion with said perforations, and also communicating at its lower portion with the interior of the clothes container, and means in said upright chamber for forcing a current of water downwardly through it.

AMERICAN CONSUL TELLS OF MARKET IN CHINA FOR HARDWARE.

Information of a practical nature concerning markets for hardware is furnished by United States Consul N. T. Johnson, who is stationed at Changsha, China. In a recent issue of *Commerce Reports*, the official daily publication of the United States Bureau of Foreign and Domestic Commerce, he writes as follow:

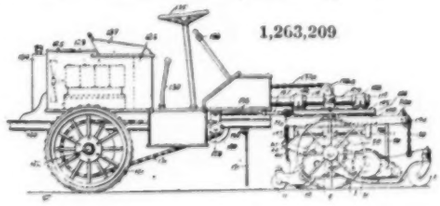
There are no Chinese dealers at Changsha equipped with facilities for entering into direct relations with manufacturers in the United States. In order that American hardware manufacturers may get in touch with the demand here, they should establish an agency in Shanghai or at Hankow, so that they may be prepared to meet such demand as arises from time to time for hardware goods.

There is an increasing demand for hardware products in this province. The increased use of machinery in all of the industries makes for increased demand for machine tools, valves, piping, gauges, pipe couplings, steam whistles, electrical supplies of all kinds, shovels, hand pumps, scales, hammers, pincers; builders' hardware, such as door knobs, locks, hinges, window fastenings, bolts, padlocks; and furniture hardware of all descriptions; nails, screws, etc. All of these things are found in the local dealers' shops in increasing quantities and they are all brought in through dealers at the larger ports down river.

American merchants should not forget that the market in China has certain established preferences with regard to trade marks. The attention of the consulate was called to an order for nails by a Chinese dealer at a nearby port to an American exporter. When the nails arrived and were inspected they were found to answer specifications with the single exception that the heads of the nails were plain. It so happened that the demand at that place was for a nail that had a head marked in a peculiar way. The new nail could not be disposed of, although it was the same size, in fact, the same nail. They were finally sold at a loss. Little things like these should not be lost sight of by American manufacturers who desire to meet a demand in China.

ACQUIRES UNITED STATES PATENT RIGHTS FOR MOTOR LAWN MOWER.

William H. Coldwell, Newburgh, New York, has been granted United States patent rights, under number 1,263,209, for a motor lawn mower described herewith:



In a motor lawn mower, the combination with a plurality of mower units, comprising rotary traction devices and cutting mechanism driven therefrom, the cutting mechanism of said units being arranged to

overlap each other, and the traction devices of all of said units being arranged in a single line extending transversely of the path traversed by the machine, a mower frame connecting said units and holding their traction devices substantially in said transverse line, of a tractor frame, rotary traction devices supporting a portion of the weight of said tractor frame, a motor carried by said tractor frame and operatively connected with said rotary traction devices, connection between said frames for uniting them and maintaining said mower frame in substantially horizontal position, said connections having means permitting said frames to rock transversely with respect to each other, and also having means for permitting the mower frame to oscillate on a vertical axis, and steering means on the tractor frame connected with the mower frame.

OPPORTUNITIES FOR FOREIGN TRADE PRESENTED BY BUREAU OF FOREIGN AND DOMESTIC COMMERCE.

The Bureau of Foreign and Domestic Commerce through its Special Agents, Consular Officers and Commercial Attachés is receiving information of opportunities to sell hardware and kindred lines in several foreign countries. Names and locations will be supplied on request to the Bureau in Washington or its District Offices. Such requests should be made on separate sheets for each opportunity, stating the number as given herewith:

26,802.—An American firm with representation in the Far East desires to be placed in communication with manufacturers of steel and iron products, such as hoop, iron, relaying rails, wire, wire shorts, tin plate, box strapping, wire nails. References.

26,846.—The manager of a firm in Ceylon, who is at present in the United States, desires to secure an agency for the sale of metals, bar iron, barbed wire, hoop iron, perforated zinc sheets, and wire nails. References. He will remain in this country for about four weeks.

26,848.—A company in India desires to purchase iron and steel bars, angles, tees, plates, wire nails, bullock nails, hardware sundries, paints, hammers, hoes, brass fittings, etc. It also wishes to entertain an agency proposition for the sale of same. Reference.

26,850.—A French firm in Argentina desires to be placed in communication with American manufacturers and exporters of hardware, tools, domestic utensils, agricultural implements, bicycles and accessories, motor-car accessories, and other articles similar to these.

26,838.—A company in England is in the market for cheap bicycles for men, completely fitted up, but without tubes, tires, lamp, and bell. Frames to be 22 by 24 inches and rims 28 by 1½ inches. Quotations should be made f. o. b. New York or other United States port. Reference.

26,839.—A member of a firm in South Africa, who will be in the United States for about two months, desires to secure an agency on a commission basis, for the sale of cutlery, nickel and silver plated ware, and special and fancy lines. Quotations should be made f. o. b. New York. Cash will be paid. Reference.

26,840.—An agency is desired by a man in France for the sale of hardware, small tools, household articles, and all articles of hardware for big retail and wholesale firms. Correspondence should be in French. References.

26,841.—A man in France is desirous of securing an agency for the sale of American products. He mentions no particular line.

RETAIL HARDWARE DOINGS.

Iowa.

C. Hansen and Brother have purchased the stock of hardware of the Peterson Hardware Company at Atlantic.

Kling and Johnson have sold the Glidder hardware store at Corwith to A. A. Anderson.

R. E. Counce has bought the Blanchard and Cooley hardware store at Chariton and will continue the business at the same location.

O. C. Miner has taken his nephew Dean Curtis as a partner in his hardware business at Greene.

Whitney and Jensen are building an addition to their hardware store in Eldora.

Perryman and Weir have purchased the hardware store of Reynold Brothers and Elliott.

Theodore Cumber of Northwood has sold his hardware business to H. and A. Gullickson.

Charles Rogers of Winfield has bought the hardware store of Carpert Company in that town.

E. D. Bare of Walker has disposed of his hardware interests to J. F. Greiger.

Kansas.

Roy Johnson will open a hardware store at Gaylord.

The Western Lumber Company has purchased the hardware store at Rolla formerly owned by the Stewart Hardware Company. Charles P. Williams will continue as manager.

J. M. Flemming has bought a hardware store at Monument.

C. N. Emery has acquired the stock of hardware and implements of the Duncan Hardware Company at Baldwin and is closing out the entire stock.

B. C. Hurst has sold his hardware store in Lakin to H. Harms of McPherson.

Minnesota.

John W. Koolmann has sold his interest in the hardware business of Koolmann and Hagen at Mankato to W. P. Barrett.

Kulot Brothers have opened a hardware store at Wills.

A new hardware store will be opened at Sherburn by Charles Heidecker.

Missouri.

The hardware store at Turney has been sold to Charles Walker who will take possession at once.

R. G. Ruley is erecting a new store building at Oregon for the Teare and Ruley hardware firm.

Nebraska.

S. T. Doher has purchased a hardware business at Wilcox.

J. Lewis will engage in the hardware business at Chappell.

North Dakota.

Rosendahl and Nyhagen who conduct a hardware and harness business at Dunn Center and Manning will open a similar business at Dickinson.

Gullickson Brothers have purchased the Theo Cumber hardware store at Montpelier.

J. C. Haden has bought a hardware business at Leal and will devote all his time to making it a success.

Joseph Seiber has concluded negotiations for the acquisition of the hardware store of U. B. Iwerke at Davis.

The hardware busines of Hugelen and Thurman at Grand Forks has been sold to F. U. Berg of Glenora and O. F. Berg of Hawley Minnesota.

Oklahoma.

M. A. Smith is making plans to transfer his hardware business at May to Buffalo.

F. M. Thorne has traded his hardware store at Curtis to James Morgan.

The Palmer Potter Hardware Company at Weatherford has purchased the building now occupied by L. A. Woody. This firm succeeds the Bonebrake Hardware Company.

R. B. Snell has moved his stock of hardware at Mangum to the building formerly occupied by the B. E. Davis dry goods store.

Clarence Robbins has purchased the hardware store of L. C. Quigley at Covington.

The Walker-Johnston Hardware and Furniture Company, Oklahoma City, has been incorporated with a capital of $7,000 by R. L. Walker, Lewis S. Johnston and W. H. Washburn.

South Dakota.

Anton Skorheim has bought a hardware store at Huron.

Texas.

E. G. McKinney Hardware Company, Honey Grove, has changed its name to the McKinney Hardware Company.

The Holt Hardware Company, Mineral Wells, has purchased the building now occupied by the Mineral Wells Hardware Company. The latter Company will move very shortly.

Clifton Roper has bought the interest of Mellie Rogers in the hardware firm of Rogers and Roper at Mount Pleasant.

J. C. Mason has purchased the remaining stock of A. E. Mason at Gonzales, and will continue to do business at the same location occupied by the latter.

Wisconsin.

The hardware stock of H. J. Heyer at Darien was damaged by fire, the loss being estimated at $500.

The Marks stock of hardware bought by M. Grover at Tomah was shipped to Ridgeland.

W. E. Goerge has sold his interests in the New London Hardware Company at New London to W. F. Block.

AUTOMOBILE ACCESSORIES SOLD BY HARDWARE DEALERS

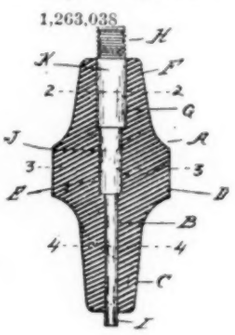
SUCCESSFUL DEALER EXPLAINS HOW TO MAKE ACCESSORIES PAY.

Some sound advice is given to hardware dealers who sell automobile accessories by a dealer who has made a success of this line. He says, in part:

"Somebody has said, 'The secret of success lies in careful study of yourself and your opportunities.' Surely, this is the opportunity for hardware dealers to get their portion of accessory business. The buying public's demands are pretty well confined to three features—cost, usefulness, and attractiveness of the accessories, and I think you are well advised in compassing these three features in order to serve the popular demand. Your easiest profits are those made through keen, judicious buying of the standard articles at fair prices, and selling them on the same basis, and not from the big, red headline, 'Bargains.' To decide the lines of accessories to put in stock, the best guide is to stock accessories for cars that require additional equipment in order to obtain more comfort and ease in operating them."

OBTAINS PATENT FOR SPARK PLUG.

Albert J. Champion, Flint, Michigan, assignor to the Champion Ignition Company, Flint, Michigan, has secured United States patent rights, under number 1,263,038, for a spark plug described in the following:



In a spark plug, the combination of an insulator having a small sized bore through the inwardly projecting portion thereof, an enlarged bore through the enlarged central or body portion and a further enlarged bore through the outwardly-extending portion, and an electrode having portions of corresponding size for fitting within said insulator.

KEEPS STOCK RECORD OF ACCESSORIES SOLD DURING THE SEASON.

Hardware dealers are appreciating to a greater extent, as time passes, the necessity for using system in stocking accessories. More and more they are realizing the waste of money in buying more than they can sell. But even though most of them do understand this, there are a good many who decide how large a supply of accessories they are able to handle by pure guess work. They use no definite method for determining what lines to stock and in what quantities to buy. Their profits are, accordingly, much lower than they should be, and the poor guessers even lose money.

In view of the fact that this problem of deciding the quantity of automobile accessories to stock is of great importance to the hardware dealer, it is well to find out what some successful dealers do along this line. One of the most common and simple methods used to determine the amount of accessories to take in at the beginning of the season is by taking into consideration the amount disposed of during the previous year. But some dealers do not know exactly how much was sold during the past year. They have only a general idea and it is not sufficient to enable them to make an accurate decision. Therefore, the thing to do is each season to keep a careful and simple stock record of the accessories sold. By doing this a basis can readily be formed for the following season, and, furthermore, the dealer learns exactly the quantities to buy at the right time during the touring months. If a stock record is kept during each season, much benefit accrues to the dealer in enabling him to gauge the quantity to buy at any time.

When stocking accessories, the dealer should consider the demand for the different articles in his particular community, and should limit the buying of any kind of accessory to his ability to make a quick turnover on that article. It is safer, also, to buy for normal requirements, rather than to engage in speculation. While there is profit to be made in handling as complete a line of accessories as possible, there is danger in buying beyond what can be profitably sold. An oversupply means a loss of money, partly in discounts and in interests, and partly in increased expenses. It is possible for the dealer to make a good profit on his automobile accessories by keeping up the resale price of the goods. In fact, in most cases the merchandise is worth the price which has been set, and it is only fair and wise to sell it at that price. It is not advisable to lower the price of an article, because it is a hard thing to establish it again. The dealer does not only lose the profits on that one article, but he also loses the profits on many other articles. If dealers will take all these things into consideration, and, above all, if they will keep a simple stock record of the accessories sold during the season, there will be no danger of losing money on this line of goods.

BLUNDERS CAN BE TURNED TO GOOD.

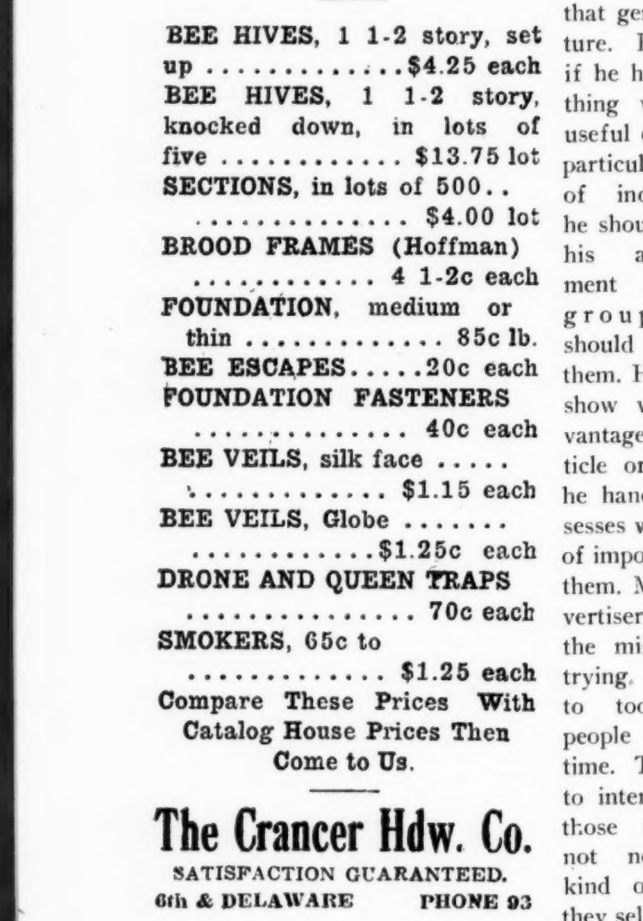
We all make blunders. That is why there are rubbers on lead pencils. Don't try to evade responsibility or to shift the blame of blunders. One mistake may teach us more than ten successes, if we study it carefully and take pains not to fail in that way again.

He who lends to a friend often makes an enemy.

ADVERTISING CRITICISM AND COMMENT

Helpful Hints for the Advertisement Writer

If a merchant has something to sell which appeals to many classes of people rather than to any one particular class, he should make his advertisements broad and show that the commodity is of that general nature. However, if he has something which is useful only to a particular class of individuals, he should direct his advertisement to that group. He should speak to them. He should show what advantages the article or articles he handles possesses which are of importance to them. Many advertisers make the mistake of trying to talk to too many people at one time. They try to interest even those who do not need the kind of goods they sell, instead of confining their remarks to those who do need it. This is simply wasted effort. On the other hand, the advertisement which aims to attract the attention of those to whom the commodity is of value, and which speaks directly to them and at them is space well used. In the latter class may be placed the advertisement of The Crancer Hardware Company, reproduced herewith from the *Leavenworth Post,* Leavenworth, Kansas. The articles mentioned in the advertisement are of use to those interested in the care of bees, and the copy writer has made this fact known by beginning the advertisement with the words, "Attention Bee Keepers." The company has also appreciated the importance of another forceful principle of advertising, namely giving the prices. This is done in a very strong way and is made emphatic by the challenge to compare the prices with those of mail order houses.


ATTENTION
BEE KEEPERS
BEE HIVES, 1 1-2 story, set up .....$4.25 each
BEE HIVES, 1 1-2 story, knocked down, in lots of five ..... $13.75 lot
SECTIONS, in lots of 500.. ..... $4.00 lot
BROOD FRAMES (Hoffman) ..... 4 1-2c each
FOUNDATION, medium or thin ..... 85c lb.
BEE ESCAPES.....20c each
FOUNDATION FASTENERS ..... 40c each
BEE VEILS, silk face .... $1.15 each
BEE VEILS, Globe ....$1.25c each
DRONE AND QUEEN TRAPS ..... 70c each
SMOKERS, 65c to ..... $1.25 each
Compare These Prices With Catalog House Prices Then Come to Us.
The Crancer Hdw. Co.
SATISFACTION GUARANTEED.
6th & DELAWARE PHONE 93

Shown herewith is a reduced reproduction of a part of a half-page advertisement of the J. E. Ferguson Hardware Company, which ran in the *Leader-Courier,* Kingman, Kansas. The upper half affords an excellent example of the effectiveness of a good illustration. Very often, copy writers attempt to attract attention by a drawing which has no relation to the commodity on sale. The result is that the buyer accepts the attempt as a cartoon, and forgets entirely about the article being advertised. The practice of putting funny sketches in advertisements which do not tell anything about the merchandise should be discouraged as being both foolish and wasteful. However, when the copy writer arranges to have in the advertisement one or two illustrations which actually speak on the "subject before the house," the result is sure to be beneficial. The illustration in the upper half of the advertisement, therefore, is particularly effective. It forcefully and graphically shows the advantages of the fence which the dealers sell.

PHONE 57
J. E. FERGUSON HDW. CO.
ALSO VARIETY DEPARTMENT
KINGMAN, - - - - - KANSAS
PHONE 57
American Fence for Every Purpose
26-in. 6-in. stay hog fence, per rod ..... 50c.
32-in. 6-in. stay hog fence, per rod 65c.
Galvanized barb wire ..... $6.00 per 100lb.
Black barb wire ..... $5.25 per 100lb.
2-ft. poultry fence, per 150 ft. $2.40
3-ft. poultry fence, per 150 ft. $3.60
4-ft. poultry fence, per 150 ft. $4.80
5-ft. poultry fence, per 150 ft. $6.00
Perfection Kerosine Stoves
The Stove With The Long Blue Chimney.
The Stove With The Large Glass Oil Tank.
The Stove That Guarantees Satisfaction.
The Stove That Does Not Smoke Nor Smell.
Three-Burner Stove $18.00
Four-Burner Stove $23.00
Perfection Wicks, each ..... 25c.
Bon Ami, Revonoc, Monarch, Blue Bell, Quickmeal wicks, each ..... 25c.
Ovens ..... $3.00 to $5.30

The lower part of the advertisement is also strengthened by a striking illustration. The features of the stove are brought to the reader's attention in convincing fashion. The giving of prices in both parts of the advertisement is a highly laudable feature. The rest of the half-page advertisement as it appeared in the newspaper contained an interesting column of store news, a patriotic appeal to buy liberty bonds, and illustrations and prices of other articles. It is a pleasure to speak in favorable terms of such an advertisement.

HEATING AND VENTILATING

PRESIDENT RICHARDSON RESIGNS TO DEVOTE ALL HIS TIME TO THE SERVICE OF THE GOVERNMENT.

The ripe experience which years of active connection with the heating and ventilating industry have given D. Rait Richardson, president National Warm Air Heating and Ventilating Association, makes his services very desirable to our Government at the present time. Accordingly, he has been called upon by the authorities at Washington to place his knowledge and talents at the disposal of the nation in the promotion of matters relating to the carrying on of the war. He has, therefore, sent the following letter of resignation to the officers, executive committee, and members of the National Warm Air Heating and Ventilating Association:

"There is a measure of regret in the necessity which forces me to tender my resignation as president of the National Warm Air Heating and Ventilating Association.

"This action has become necessary for the reason that I have had a call from the Government which I can no longer lay aside and which has been accepted formally. Inasmuch as it necessitates my living in the city of Washington, and will take my entire time, it is impossible for me longer to serve in an official capacity and be of any use or good to the Association. I, therefore, beg that in accepting the resignation which is reluctantly tendered you will appoint one of the many able personalities in your membership who can, without doubt, carry forward your interests to better advantage than I.

"I am hoping that in the future when the unfortunate conditions which surround us are past and over, I may again be asked to serve you in some capacity, no matter how humble. Please believe that this action is one which is regretted more than any other of many which I have found necessary.

"D. RAIT RICHARDSON,
"President."

A supplementary letter from Allen W. Williams, secretary of the Association, conveys to the members the information that President Richardson has already assisted him to complete the full program together with the details of the organization's forthcoming convention, which is to be held June 12, 1918, in Milwaukee, Wisconsin, at which time the President's resignation will be formally presented and his successor chosen.

COLD AIR SUPPLY IS AN ESSENTIAL ADJUNCT OF WARM AIR HEATER.

All authorities on warm air heating are agreed that a sufficient quantity of cold air—brought to the warm air heater in a scientifically correct way—is an essential element of an efficient warm air heating system. No installation, therefore, can be considered perfect which does not provide ample facilities for a cold air supply. It may be said without exaggeration that a very high percentage of the troubles and shortcomings of warm air heating plants are due to faulty cold air ducts and in some instances, to almost entire neglect to make provision for a supply of cold air from the outside. It is just as necessary to remove all friction from the movement of cold air as it is to facilitate easy movement of the warmed air.

There are three methods of supplying cold air which are in common use. The first is that of wood boxing often found on cheap work. The second is by means of a duct constructed of galvanized iron; and the third is a duct consisting of curved elbows. In industrial centers where there is an unusual amount of dust and soot, it is important that the supply of cold air be filtered This can be done by means of cheesecloth baffles. There are many ways in which these filtering cheesecloth baffles can be used, but there is only one general method. The outside air upon entering the basement flows into a cold air chamber, striking at a sharp angle a series of filter screens partially covered with cheesecloth, which are set in the cold air chamber at such an angle that the incoming supply of air is compelled to make a number of right angle turns in passing the baffles.

PROBLEM OF MAN WITH BIG FAMILY IS HAPPILY SOLVED.

"I wouldn't go through another winter in this kind of a steam-heated flat if the owner rented it to us for ten cents a month!"

Mrs. Green spoke with a determination which her husband recognized from long experience as having the same finality as a decision of the Supreme Court of the United States.

Like many another American family, the Greens were confronting the vexing question of renewing their lease or finding another apartment in which to live.

Teddy Green was manifestly worried.

"I don't blame you, dear, for not wanting to stay here," he said. "But what are we going to do? We can't get a high-grade apartment with our big family. Landlords simply won't allow children in—"

"Yes, I know," interrupted his wife with a touch of impatience. "However, that's no reason for staying where we are. The place is as cold as an icebox half the time. The plumbing is out of order, almost every other week. We positively must get a warm flat for the sake of the children."

"Do we absolutely have to live in a flat?" queried

Teddy Green. "Why can't we get a home of our own where the children will have plenty of room to—"

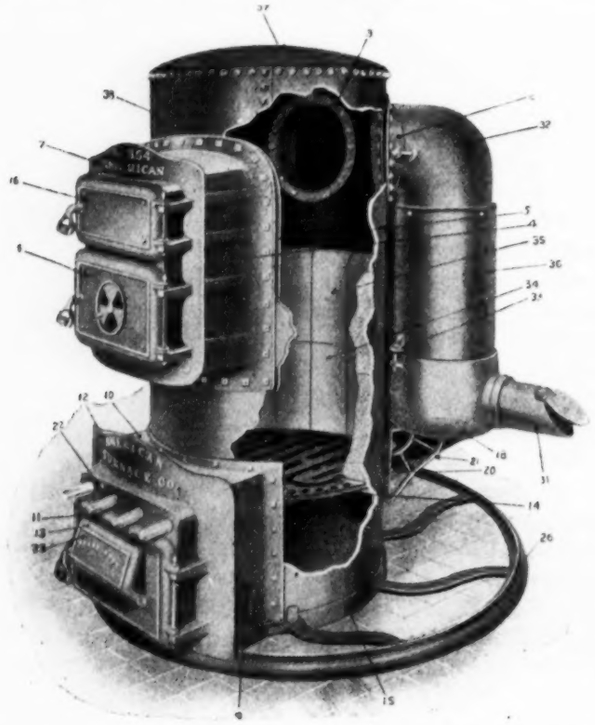
"I tell you I won't have a steam-heated house," interposed his wife, "and I won't be bothered with heating stoves all over the place. Besides, there is—"

"Who said anything about a steam-heated house?" interjected Green with some asperity. "Steam heat is no good, anyhow, even under the best conditions."

"I wasn't talking about a steam-heated house," he continued. "The fact is, I had in mind that new cottage over on Elm Street which was built for Harry Walker. Harry got a job in South America and the place can be bought at a decent figure."

"Wouldn't it be hard to keep it warm in cold weather?" asked Mrs. Green.

"No, I think not," responded her husband, "because it is equipped with an American Boiler Plate Warm



American Boiler Plate Warm Air Heater, Made by American Furnace Company, St. Louis, Missouri.

Air Heater, made by the American Furnace Company of St. Louis, Missouri. I happen to know considerable about it. One day during the awful January blizzard I had to make a business call at Mr. Moore's house in Elmhurst and, believe me, his house was as warm and cozy as anyone could wish."

"Moore took me down into the basement," he added, "and showed me the warm air heater. It's the same kind as in Walker's new cottage."

"One thing I like about a warm air heater plant," he continued, "is that it makes you independent of the whims of the janitor. The fire can be kept going all night long. The rooms don't get chilly at 9:30 or 10 o'clock at night as in an ordinary apartment building where the tenant must grin and bear it."

"That all sounds good, Teddy, dear," his wife admitted, "but isn't it hard to operate? Isn't it a lot of trouble and—"

"The American Boiler Plate Warm Air Heater is easy to take care of, my dear," he answered. "You don't have to be an engineer or trained mechanic to run it. Our boys can manage it before and after school hours and you'll never know a moment's worry about it."

"Well, goodness knows, I'm more than willing to get into a place where there is plenty of warmth in winter," said Mrs. Green with a sigh of relief. "Let us buy the Walker cottage, Teddy, dear, and give the children a home instead of a flat."

HANDY ESTIMATING BOOK IS READY FOR DISTRIBUTION.

In the early days of the trade, much precious time was consumed by contractors and dealers of the warm air heating industry in working out by slow mathematics the various estimates required in their business. Today the tendency everywhere is economize as much as possible in the time spent on work of this nature. Consequently, a genuine welcome awaits the Number 40 Handy Estimating Book just issued by F. Meyer and Brother Company, manufacturers of the Handy Furnace Pipe, 1311-1313 South Adams Street, Peoria, Illinois. The prices in the book are all net. It contains many tables for estimating warm air heater work. In addition, the book has much useful information for the sheet metal industry. Copies of this Number 40 Handy Estimating Book may be obtained by writing to F. Meyer and Brother Company, Peoria, Illinois.

EMPHASIZES IMPORTANCE OF RIGHT SIZE OF WARM AIR HEATER.

Highly individualized competition in the past has been responsible for much of the difficulties which confronted the warm air heater industry. Unrestrained competitive bidding forced the use of methods and materials which brought the trade more or less into disrepute. The harmful effect of this state of affairs was manifested chiefly in the installation of warm air heaters which were of a size insufficient to perform the required service. Methods of figuring capacities did not take into consideration the cooling surfaces of a building, that is, the heat losses through glass windows, outside doors and walls.

With the inauguration and growth of organization among warm air heater dealers and installers, a change for the better took place. Accurate knowledge began to be substituted for guess-work. Science was introduced into the ratings of warm air heaters and manufacturers began to establish more exacting standards of computation for their product. The result has been a steady improvement all along the line.

Today there is no excuse for using a warm air heater which is not of the right size for the building which it is intended to heat. The laws governing the generation and distribution of heat with reference to a given amount of cubic air content in a building are sufficiently well determined to enable any intelligent dealer or installer to select a warm air heater of the proper size. A familiar example will serve to illustrate this point. Take a house 30 by 40 feet, having ten rooms to be heated. Suppose that this building

has twenty windows, averaging 3 by 6 feet, and three outside doors, including transoms, 3 by 8 feet. To arrive at the approximate cubic contents of such a house is a matter of simple arithmetic, thus:

$30 \times 40 \times 10$ plus $30 \times 40 \times 9$ equals 22,800 cubic feet.

The glass surface, counting the doors also as glass, would be $3 \times 6 = 18 \times 20 = 360$ and $3 \times 8 = 24 \times 3 = 72$. Adding 360 to 72, the total glass surface is 432 square feet. The wall surface would be $30 + 40 = 70 \times 2 = 140 \times 19$ (height of ceilings) $= 2{,}660$ square feet.

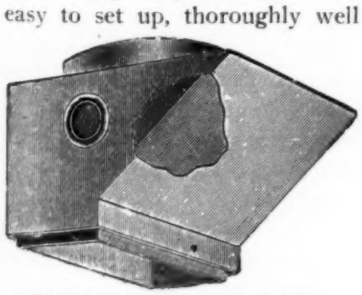
For practical purposes, it may be assumed that 4 square feet of exposed wall equal 1 square foot of glass in cooling surface or heat loss. Hence the glass equivalent of the wall surface is 2,660 divided by 4, or 665, which, added to the 432 square feet of actual glass, gives a total glass equivalent of 1,097 square feet. Calculating on a basis of two changes of air per hour, the total amount of air to be warmed each hour will be $22{,}800 \times 2$, or 45,600 cubic feet. The loss of heat by transmission through ordinary glass windows is estimated at 0.8 British Thermal Units per square foot per hour per degree difference in temperature. Hence, with the outside temperature at zero, for example, and the temperature of the rooms at 70 degrees Fahrenheit, the difference would be 70 degrees. Therefore, $1{,}097 \times 0.8 \times 70 = 61{,}432$ British Thermal Units.

Bearing in mind that one heat unit will raise 55 cubic feet of air one degree of temperature, and assuming that the warm air at the registers enters the rooms at 120 degrees, the result is: 45,600 divided by $55 \times 20 = 99{,}480$ British Thermal Units. A combustion of 3 pounds of good anthracite coal per square foot of grate per hour will give 30,000 British Thermal Units in a correctly constructed warm air heater.

Hence, to calculate the correct size of grate to heat the house in question, the necessary heat units must be added, namely, $61{,}432 + 99{,}480 = 160{,}912$, which, divided by 30,000 British Thermal Units, equals 5.36 square feet—the area in square feet of the grate required in locations where zero weather is to be expected.

DESCRIBES WARM AIR HEATER PIPE HAVING SAFETY FEATURES.

No wings to pull out, no cleats to bend, quick and easy to set up, thoroughly well fitting, no buckling, sixty per cent saved in labor—these are some of the claims tersely and forcefully made for the sectional warm air heater pipe manufactured by the Michigan Safety Furnace Pipe Company, 113-115 East Fort Street, Detroit, Michigan. The inner walls of the Michigan Safety Furnace Pipe, one of which is shown in the accompanying illustration, form the cross walls. The air chamber between the inner and outer pipe is at all times retained—according to the manufacturers—by means of a perforated spacing collar at each end of every piece and joint.



Michigan Safety Furnace Pipe, Made by Michigan Safety Furnace Pipe Company, Detroit, Michigan.

Other advantages said to be possessed by the Michigan Safety Furnace Pipe are as follows: The pipe being made in lengths of 26¾ inches, and the short joints in lengths of 2½, 4¾, 8, 10¾, and 15¼ inches, enable the warm air heater man to construct any desired style of stack, no matter how short or how long or how crooked it may be, without making or cutting a single piece or wasting a part of an inch of material. Every joint and piece firmly embraces and fits into the other so that when a stack is completed, it is as smooth and straight, in and outside, as the bore of a gun. A request addressed to the Michigan Safety Furnace Pipe Company, 113-115 East Fort Street, Detroit, Michigan, will bring further particulars and descriptive literature and prices.

EXPLAINS THE ADVANTAGES OF THE GILT EDGE ALL CAST WARM AIR HEATER.

Realizing that dealers and installers will do business with those manufacturers who can prove the merits of their products, R. J. Schwab and Sons Company, Milwaukee, Wisconsin, offers a very clear explanation of the advantages of its Gilt Edge Warm Air Heaters. Taking the Gilt Edge All Cast Warm Air Heater, illustrated herewith, as an example, the manufacturers point out the features which tend to make it so popular. They state that the combustion chamber in this heater is large and ample, thus preventing the smoke and gases from passing into the outer radiator before being fully ignited, and eliminating the possibility of a waste of fuel. It is also claimed that this heater has a large radiator, thus providing sufficient radiating surface over the fire pot. A large ash pit door and a high quality fire pot are other advantages said to be found in the Gilt Edge All Cast Warm Air Heater. This heater, declare the manufacturers, is designed for the purpose of meeting the demand of those who are looking for an all cast warm air heater to burn either hard or soft coal, and which will be both economical and durable. Dealers and installers may receive further information regarding this heater, and also the other heaters which R. J. Schwab and Sons Company manufactures, from the company's latest catalog which it supplies upon request.

Gilt Edge All Cast Warm Air Heater, Made by R. J. Schwab and Sons Company, Milwaukee, Wisconsin.

PRACTICAL HELPS FOR THE TINSMITH

COPPER ROOFING.

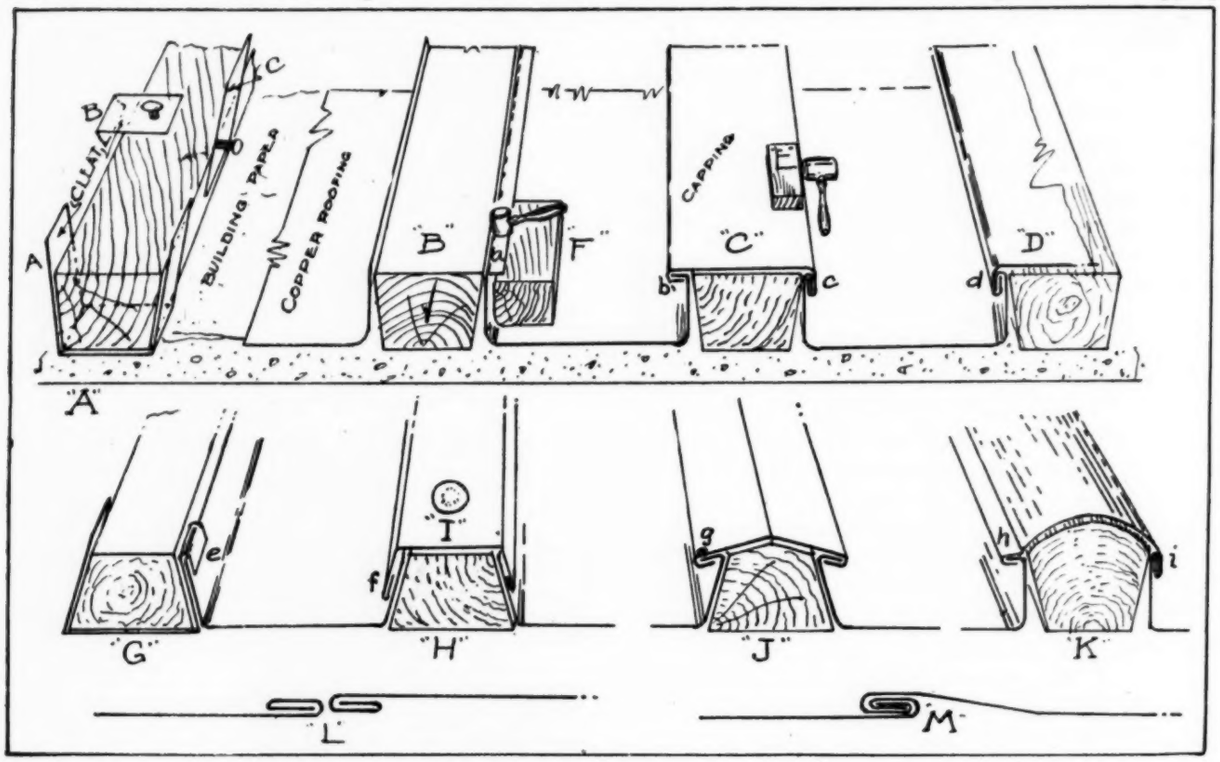
By O. W. Kothe.

Copper Roofing is something that thousands of workmen will not have the opportunity to work on as is the case with tin roofing. In many cases the standing seam is used as described in the past issue. But generally the battening strips are used as shown in this drawing. This gives the roof a ribbed appearance.

At "A" we have the usual form of a battening strip. These are made in various designs as shown in the drawing and can be placed with the narrow side down as at "A" or on the top as at "G." When placed as at "A" then the metal must be bent a trifle shorter to give room for expansion and contraction. Cleats as at A or B or C may be used. The one at A is preferred as it goes around the strip. The wood strips are either nailed or screwed down on wood sheathing, and where concrete roofs are met with they are bolted down. Carpenters generally do this. A good building paper should be laid over the concrete and care must be taken so no abrupt protrusions appear. The width between battening strips is made to suit the width of sheet copper that can be obtained, which varies from 28 to 36 inches in width. Soft copper is the most serviceable as it takes up a greater expansion with ease than the cold rolled copper will. The edges are tongued up and placed against the battening strip as at "B." The corners should be somewhat rounding, never sharp. A wood block as at "F" is used for laying the edge a, down as shown.

When both sides are finished in this way and the cleats bent over, the cap "C" is slid over, first bending as at b, and then double seaming as at c-d. A wood block as at "B" helps keep the metal smooth and enables better seaming and more rapidly.

The field sheet between "C" and "D" shows the finished roofing joint. At "G" the battening strip is placed reversed, which enables the standing edge e, of field sheet to raise or lower as cleat permits. A capping as at "I" is slipped over and nailed in the top. Sometimes screws are used, cutting the screw or nail hole somewhat elongated for expansion and contraction and a small cap is then soldered over to make the joint tight. The capping should be hemmed as at f. At "J" and "K" we have battening strips designed for more ornamental effect. The capping edges g, and h, can be left as a standing seam, or double-seamed as at i. Of course when left as they are at g, and h, they should be well cleated and the edges should be large enough so the weather will not break the joints. On comparatively flat roofs the double lock "M" is used. This can be made as at "L" and then telescoped. Other times these double locks are made similar to a standing seam only laid over flat. Still other times these locks can be made into a cornice brake by doubling over the edges and hammering down the seam.



Patterns for Copper Roofing.

The one thought the copper roofer must always bear

in mind is freedom for the copper to expand and contract. Copper has a greater expansion and contraction than any other metal except zinc, and when two ends of a sheet are firmly attached to a roof, the expansion or contraction will compel the sheet to give somewhere. Consequently the nail holes or places where weakest will tear or break. This can be avoided when perfect freedom is maintained. Cleats should only be used and placed in such a way to permit the copper working back and forth without arresting it. Workmen who have the opportunity of inspecting the copper roofs should do so to get a more concrete idea.

SHEET METAL CONTRACTORS GO OVER THE TOP IN DRIVE FOR THIRD LIBERTY LOAN IN MILWAUKEE.

The most absorbing report made at the regular monthly meeting May 1, 1918, of the Master Sheet Metal Contractors' Association of Milwaukee, Wisconsin, came from the chairman of the Liberty Loan Drive who informed the assembled members that the Sheet Metal Division had subscribed to bonds of the Third Liberty Loan far in excess of its quota. The sheet metal contractors are jubilant over this fine showing and their confidence in the ability of the Association to carry out its pledges of patriotism has been greatly strengthened.

Other matters of interest which occupied the attention of the meeting were the report of the Convention Committee and the question of licensing journeymen. The Convention Committee reported that money subscribed for the expense to carry on the National Convention had nearly all been paid in, and that programs were completed. The locksmith is working overtime to finish the key for Milwaukee to be turned over to the National Convention, June 11 to 14. Upon suggestion by the chairman of the Convention Committee Mr. Romberger moved that the next monthly meeting be held at the Hotel Wisconsin (Convention Headquarters), Room, 157, which was carried.

A committee consisting of L. Hoffmann and John Bogenberger was called to the National Capital by the President and Secretary of the National Association and reported back that very few contracts in the Sheet Metal line were being awarded owing to the fact that all the work that had been let and finished was still in freight cars waiting for bottoms to carry the material somewhere in France.

The National Secretary, however, was instructed to visit Washington at least two times a week to see if any further work developed and, if so, to send copies of specification to each of the Local Secretaries so that all the Association members would have an even chance to get work. Mr. Hoffmann further reported that he had collected $80.00 of the $100.00 promised to the Establishing Bureau of the Defense Council at Washington, and that he was still $20.00 short. Thereupon Mr. Hollitz moved that $20.00 be taken from the treasury to reimburse the committee, which was carried.

Nominations were open for delegates to the National Convention which resulted as follows: Frank J. Romberger, John Graf, and O. A. Hoffmann were elected delegates with Alexander Goethal, Adolphus Schumann and Louis Eschenberg as alternates. The question of licensing journeymen as well as the sheet metal contractors by the State legislation came up for discussion and after three-quarters of an hour of arguments a vote was taken which showed 14 in favor and 10 against adoption. A motion was then made and carried to adjourn until June 5th, in Room 157, at the Hotel Wisconsin.

STARTS CAMPAIGN FOR MEMBERSHIP.

In order to carry into effective action the good accomplished by the recent convention of the Master Sheet Metal Contractors' Association of Illinois, a special effort is making by the Sheet Metal Contractors' Association of Chicago to increase its membership and intensify the interest of those who already belong to the organization. With this purpose in mind, the energetic secretary of the Sheet Metal Contractors' Association of Chicago, D. M. Haines, is sending out the following letter to the members:

"What are you doing to help make our meetings interesting? Our Association is no different from any other—that is, you benefit only to the extent of what you give it plus a very good percentage of interest on your investment.

"Start now and get a friend interested and have him join us. We started an educational campaign, beginning with 'overhead cost,' and a blank form sent to you to enable you properly to distribute the items. Have you sent yours in?

"Let us all try to attend regularly and have full meetings. Don't come every four months and just escape the payment of a fine. These fines do not help our Association, but your presence will. I am of the belief that we have an excellent corps of officers. Come and encourage them to work harder for our mutual benefit.

"Your delegates to the convention of the Master Sheet Metal Contractors' Association of Illinois, held recently at Springfield, are to report at our next meeting. Come and hear their reports.

"The Annual Convention of the National Association of Sheet Metal Contractors will be held this year at Milwaukee, Wisconsin, during the month of June. Why not arrange an automobile party and all go together and show the bunch how Chicago does things?

"At the last meeting the secretary reported that several of the members of our Association had not paid their dues of $3.00 to the State Association. A motion was made, seconded and carried that our Association pay this amount and charge it to the members. If these members will send in a check it will avoid a lot of bookkeeping.

"Our next regular meeting of Sheet Metal Contractors' Association will be held Tuesday, May 7, 1918, at 1:30 P. M., in Room 808 Chamber of Commerce Building, Chicago, Illinois."

Little do ye know your own blessedness; for to travel hopefully is a better thing than to arrive, and the true success is to labor.—Robert Louis Stevenson.

DISCUSSES OCTAGON ELBOW PATTERN.

Comment upon the work of other men in the same line of endeavor is always welcomed by intellectually honest folk if it is sincere and actuated by a spirit of helpfulness. The following discussion of an article by our valued contributor, O. W. Kothe, is, therefore, published in order that further light may be thrown upon the problem by additional ideas which may be developed as a result of such discussion.

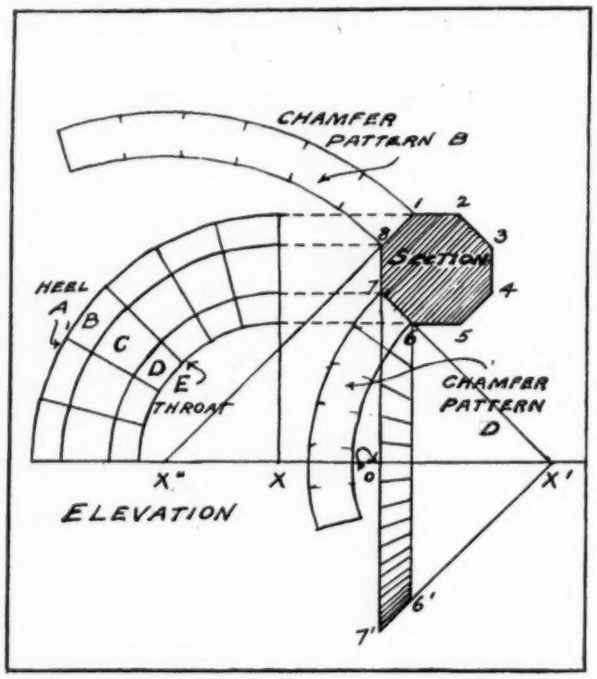


Diagram Illustrating the Principle Under Discussion.

To American Artisan and Hardware Record:

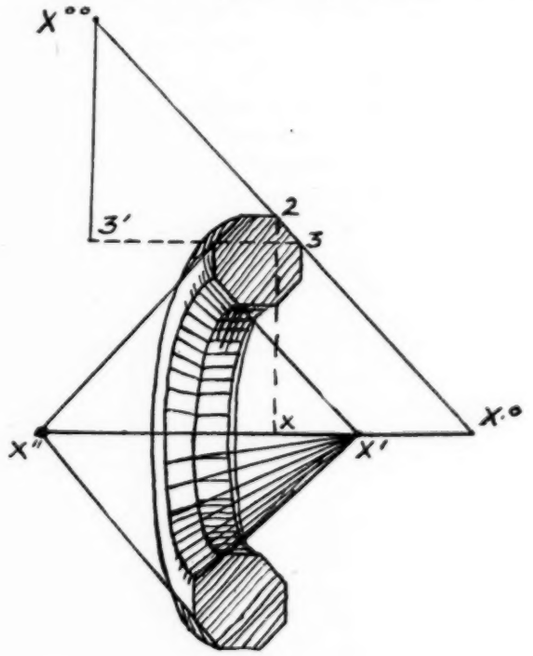
The problem of the 90 degree elbow with an octagonal section as presented in the April 6, 1918, issue of American Artisan and Hardware Record has the one advantage that the correctness of the patterns may be verified at a glance so to say before they are laid out on the metal, and therefore time and material may be saved in case they are found to be wrong. By exercising his power of imagination a little, the student can determine in his mind the principles applied and thus easily locate the mistake.

To illustrate this more clearly the accompanying drawing has been prepared. It will be evident in checking up the various patterns, that if they are correct, the outer curve of the chamfer B must be equal in length to the heel A, and the inner curve equal to the outer curve of cheek C. This also applies to pattern for D. If the spaces do not correspond, then the sweep is not correct and the pattern would be good for the scrap heap. The fault may be twofold, viz.: Inaccuracy in drafting, or inaccuracy in the application of the principle. Both are serious—the result of both spells loss.

Regarding the principle the student must picture in his mind that beveled strip B (1-8 in the section) is part of a frustum of a right cone with a point above X as apex, picturing the elevation as a quarter plan. To find the radii with which to draw the pattern B extend the line 1-8 in section until it intersects line on which X is located, as at X" in this case. Chamfer D is a part of the inverted cone shown at the right hand side, 0-X' being the altitude, 7-7' the base. It is clear that the development is by radial or conical lines If the center which is the apex of an imaginary cone is correctly placed, then the sweep must be right. If this principle is fully understood and accurately applied, it will be clear that arc struck from 8 or 3 is smaller or shorter than the one drawn from 1 or 2, and that if line 7-6 or 4-5 is accurately extended it must intersect line on which X is located, irrespective of the method used.

The cheek being in a vertical plane is the correct pattern and can be copied from the elevation. The heel and throat are developed by parallel lines and therefore do not require any further explanation. The elements underlying the development of the chamfer patterns, however, are not so readily understood. So that the reader who is interested in them may get a better idea rough sketch was made.

It will be observed, that the cones were constructed by extending the beveled lines toward the center of the ring and that all the apexes are placed on one common altitudinal line so to speak, see X°, X' and X". It will also be noticed, that if for the sake of convenience or lack of space it is preferable to strike the



ROUGH SKETCH showing IMAGINARY CONES with APEXES ON one ALTITUDINAL LINE

arcs for the larger chamfer from 2 and 3, using a center which is located as X°° for instance, then the triangle 8-X-X° (imaginary half cone) must be reproduced with 3-3' equal to 2-X, by setting off 2-X on a line drawn from 3 instead of from 2. Then X°°-2 and X°°-3 will be the correct radii with which to draw the arcs. This method is somewhat confusing to the beginner, however, and should seldom be used.

Yours very truly,

W. H. Gruening.

New York, April 30, 1918.

THE RESPONSIBILITY OF EMPLOYERS IS CLEAR IN THE MATTER OF APPRENTICESHIP.

The extraordinary demand for skilled workers which the war has developed calls attention anew to the urgent necessity for apprenticeship training. Hence it is well to give fresh emphasis to the principles and arguments set forth by the Conference Board on Training of Apprentices. This Board is composed of six leading national associations of manufacturers and employers whose members normally employ more than five million persons.

Many employes, according to a bulletin issued by this Board, are thoroughly alive to the necessity of apprenticeship training and are doing all they can individually, by action in their own shops and by making their voices heard in employers' conventions and elsewhere, to awaken their fellow employers to this industrial need. It is nevertheless a fact that most employers are giving little heed to the subject.

The average employer, not from necessity but because of thoughtlessness or habit, still prefers to get workmen whom some one else has trained. When he employs one or more boys, he does so not for the purpose of making them skilled workers, but because there is a certain amount of "boy work" about the place which can be done cheaply by boys. There is not only a widespread indifference among employers to the proper training of young workers, but there is often a selfish objection to it. Many employers make the excuse that there is not sufficient time to teach boys the trade; consequently, they refuse to employ inexperienced young people, preferring to leave their training to others. These employers demand experienced workers and will take no others, except that they employ boys for boy jobs, and do not give even these a proper chance for advancement, so that they either have to migrate to other places where such chance is given, or remain forever in the "lumper" class.

Limitation of apprentices by trade unions has helped to develop this condition of indifference on the part of employers. Many, however, do not employ the full allowable quota of apprentices which the trade union specifies, and often for professed convenience' sake and because they do not realize the investment value of apprenticeship training expense, employ none whatever. A student of this condition has well said, "Such neglect will prove in the long run to be the same sort of short-sightedness that leads the timberman to swell his immediate profits by denuding a forest, caring nothing for the predicament in which the future generation will be placed by such wholesale destruction." Then there is the type of employer who does employ inexperienced young people and believes that he is doing his duty to his so-called apprentices by tolerating their presence in his shop, although he gives their training scant attention. These boys are forced to pick up whatever trade knowledge and experience they can, supplementing it sometimes by the crude and kindly help of their fellow workmen and occasionally by the advice of a foreman or superintendent. This type of "instruction" is more commonly in vogue than any other, a system of apprenticeship that is hardly worthy of the name; to it can be traced the large number of botches and inefficient men from which practically every industry is suffering.

From whatever point of view one considers such an "apprenticeship," it must be admitted that it does not meet the requirements of the industry, the needs of youth, nor the best interests of the employer. Such system or lack of system discloses the indifferences of the employer, lack of forethought on the part of the boy and his parents, and a downright betrayal of apprenticeship education which should not be permitted in any enlightened community. This condition unfortunately gives some basis for the frequent condemnation of workshop training.

The youth who applies for admittance to a workshop, with the understanding given him on his employment that he is to "learn the trade," ought to be given the opportunity to develop his full mental and physical powers for the benefit of himself and his chosen industry. The responsibility rests squarely on the employer to give an adequate opportunity and to offer an effective training. The boy cannot be expected fully to realize the conditions surrounding his employment, its nature, its opportunities, and its difficulties. Because he has a job, he is content for the present. Yet when he is merely brought in contact with persons older than himself who take only slight interest in him or his advancement, he gets but little inspiration from the task to which he is assigned or from the meager instruction that he may receive. It is this employer-indifference that has caused many thoughtful educators to insist that the teaching of a trade can only be done properly in some type of public vocational or trade school, whereas most enlightened employers who have studied this question and applied the results of their study in their own shops have come to the definite conclusion *that the technique and hand skill of a trade can only be taught effectively where the trade is practised.*

But even though these employers believe that specific trade instruction should not be associated with fundamental public education which they consider essential for all boys and girls, whatever their future calling in life may be, they agree that the public schools can do much in preparing their graduates for serious trade study in industrial life by training them in school to think straight, to think in numbers, to think in drawing, to think in color and form and proportion, and through the hand to give correct expression to the thought. Such public school training will offer the right foundation on which to predicate specific trade instruction through apprenticeship systems.

When, however, trade instruction is given in public trade schools, it must be clearly understood that this type of education must be differentiated from the trade training which can be obtained in the shop, as the public trade school can teach only part of the required technique; the remainder must be acquired through practice on actual work under trade and commercial conditions. In the case of trade instruction through apprenticeship, on the other hand, the public school can effectively supplement shop study and shop work through correlated continuation instruction, even though the shop apprenticeship system provides, as it should, for trade training through practice in actual

work and for applied instruction in related sciences, in order to develop both a mastery of the trade and an industrial understanding and intelligence.

The most effective way to impart these two divisions of training is to associate them as closely as the particular business will permit, so that trade training and theoretical classroom instruction may be practically simultaneous. It is manifestly unfair to the apprentice who undertakes to learn a trade to furnish him with less than full opportunity to perfect himself as an intelligent and efficient craftsman. It is unfair to the trade itself and to the efficient craftsman engaged in it to turn out half-equipped workmen who parade as trained craftsmen, but are not competent to prove their right to the title by the excellence and intelligence of their work.

For the best interests of industry, apprenticeship training must be so practical and comprehensive as to *produce all-round development of each individual in his chosen trade,* to the end that those who are to be accepted in a trade as craftsmen of recognized standing *may be fully capable of performing the work as it should be performed.*

Now if we are to have efficient craftsmen "fully capable of performing the work as it should be performed," this naturally requires that there be *standards* of craftsmanship—standards that shall be recognized in each trade by both employer and worker.

Unfortunately there have not been, heretofore, any general standards of craftsmanship, specialization in a specific operation being often the only requirement for employment upon the part of the employer. Upon the part of the worker even this relatively simple requirement meant little as a standard, so long as he worked no more than the agreed-upon hours and received the prevailing rate of wages.

With the awakening of the employer to the necessity of apprenticeship, however, and the golden opportunity which it will provide for manning his shop and machinery with highly skilled workers, it will be relatively easy to establish and adopt standards of craftsmanship for each industry. To say that the adoption of such standards will revolutionize industry is to put it mildly, because no employer will undertake to train apprentices simply to perform the operations now being done by his present workers. On the contrary, the employer *will train for much higher efficiency:* he will combine practical trade training with a degree of technical instruction that will result in workers of a much greater degree of skill and a more highly developed craftsmanship.

Recognized standards of craftsmanship will do more towards asserting and maintaining American supremacy in the world's business than almost any other one thing. They will result in giving to manufacturers a product of a standard otherwise impossible; they will give him an increased output; they will give him intelligent workmen who will take pride in their work.

Standards of craftsmanship will do even more for the worker, for they will develop to the utmost such talents as he may possess, bring to the surface any latent skill of a special order that he may have, and permit him to develop himself fully both mentally and physically. They will spur ambition, increase his earning capacity, and make him a better citizen.

But are we to have an apprenticeship system? Shall there be a revival of apprenticeship in industry? Are we to have this higher type of workman? Is "Young America" to enjoy his undoubted right to craft mastery? Is American industry to lead or fall behind? Are we going to do our part in the making of good citizens? *The employer is the key to the situation.*

The employer is not going to be weighed and found wanting. He is the largest factor in industrial development. "He knows," as a leading educator once said, "that special education for the trades accompanied by a a training in economics, mathematics, science, and the precepts of clean living, will serve as a basis for stable equilibrium in the industrial world now so often upset by industrial strife."

It behooves every employer of labor to give the subject of apprenticeship training earnest thought, because, unless American employers shall awaken quickly to the necessity of developing an adequate and continuing supply of intelligent workers who shall be masters of their craft, the day will speedily come when American-made products will largely be supplanted by those of foreign manufacture.

On the other hand, no system of trade education, public or private, can endure without the co-operation of the employer; consequently the employer must be considered in every scheme of training for industry. The employer knows only too well the crying need for such training, and this message is to urge him to action for his own good, as well as for the well-being of his craft and of his nation.

We are on the eve of great world events, greater than any through which we have passed or are passing, because, after the present world struggle shall have been settled there will come a greater commercial and industrial contest between civilized peoples for supremacy in the world's markets than has ever occurred. A period of readjustment must come first, a peaceful mobilization of industrial resources—*and then?* A well known business man has said:

"Highly developed manual skill has had small place in the industrial development of America, and in the intense rush of that development in the last decade we have almost wholly lost sight of the necessity for training a new generation of skilled mechanics. One of these days, and I fear now the time may be unpleasantly near at hand, the whole nation will wake up to the truth that in that haste of our marvellously successful development we have lost sight of the fact that in the new industrial order which we have evolved we have left no place for a broad and adequate training for our industrial workers. Unless we provide that training we shall find suddenly our whole industrial structure standing on an insecure foundation."

QUALITY IS BEST SELLING AID.

Quality is the only permanent basis of success in any article. There is little money in selling an article once. The profit comes when you sell some one kind of thing over and over again. To get that kind of trade you must deliver the goods.

FORMS AN AUXILIARY COUNCIL FOR NATIONAL DEFENSE.

Ninety-eight and eight-tenths per cent of the employes of the Berger Manufacturing Company, Canton, Ohio, subscribed for a total of $112,750 worth of bonds of the Third Liberty Loan in a whirlwind campaign conducted by six different teams numbering in all 75 workers. Considering all the circumstances, this is conceded to be one of the most noteworthy achievements in the present drive for funds wherewith to enable our Government to finance our part of the war.

With characteristic enterprise the Berger Manufacturing Company manifested its approval of the work of the teams by entertaining them at a dinner given in the Courtland Hotel, Canton, Ohio. The guests were addressed by George H. Clark, chairman of the Draft Board, whose patriotic appeal made so profound an impression upon them that they unanimously decided to organize at once a Berger Auxiliary for the Council of National Defense.

It was agreed that the Auxiliary should extend throughout the plant and that every employe be invited to become a member thereof. At a meeting held April 27, 1918, the charter members established a permanent organization, electing W. H. Koontz of the Welfare Department, Berger Manufacturing Company, as president of the Auxiliary, and Howard Miller, product inspector of the company, as Secretary and Treasurer. One vice-president is to be chosen by each of the six aforementioned teams. The purpose of the Auxiliary Council is to render efficient co-operation in connection with all war campaigns.

EXPANDING RUBBER STOPPER SAVES TIME IN AUTO RADIATOR REPAIR WORK.

The most important element of cost in the repairing of automobile radiators is the amount of labor-time expended. Compared with this element, the materials used are a relatively insignificant factor in the total cost of the work. Any device, therefore, which enables the sheet metal worker engaged in this class of repairs to economize labor-time is sure to attract favorable attention.

It requires no long and complicated process of reasoning to perceive that, if three repair jobs can be done in the time commonly required for two repair jobs, the profit will be one-third greater than usual. This is one of the arguments advanced in approval of the Expanding Rubber Stopper, shown in the accompanying illustration, manufactured by F. L. Curfman Manufacturing Company of Maryville, Missouri.

Expanding Rubber Stopper, Made by F. L. Curfman Manufacturing Company, Maryville, Missouri.

According to the description of the makers, this Expanding Rubber Stopper goes right down in the hose connection and does not extend out in the way while the mechanic is working on the radiator of the automobile. Just a twist or two on the thumb nut gives a thoroughly tight seal. This stopper is made in 8 sizes to fit all radiators. Prices, and other details, together with catalogs of tools for automobile radiator repairing may be had by writing to F. L. Curfman Manufacturing Company, Maryville, Missouri.

SELF-LUBRICATING BEARING IS AN ADVANTAGE IN VENTILATORS.

In view of the fact that friction causes much trouble in many types of ventilators, it is a decided advantage to have one which runs in a self-lubricating bearing. When to this advantage is added the further quality of being proof against heat or cold, a powerful set of selling arguments can be derived in behalf of such a ventilator. The arguments receive additional force if it can be shown that the self-lubricating bearing never requires any oil or grease. Of such paramount importance are these features in a ventilator that any company which claims to embody them in its product is certain to command a careful and attentive hearing.

Special interests, therefore, attaches to the statement of Berger Brothers Company of Philadelphia, Pennsylvania, that the Earle's Improved Revolving Ventilator which it manufactures possesses all the virtues which are desirable in that type of mechanism. The fan of the Earle Improved Revolving Ventilator—a view of which is shown in the accompanying illustration—is said to revolve without any noticeable noise. The current of air which it produces has a strong upward direction which, it is averred, positively inhibits the formation and action of any downdraft.

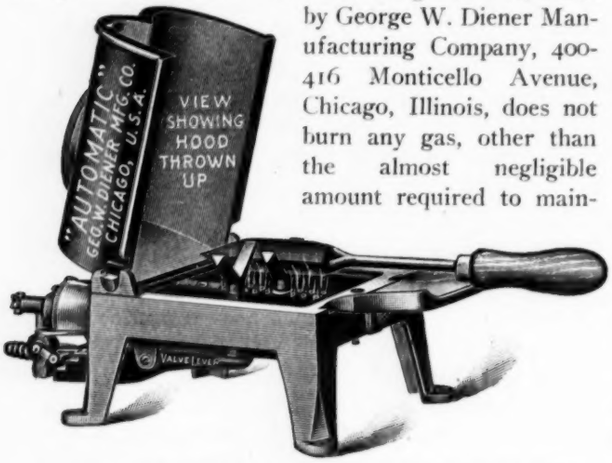
Earle's Improved Revolving Ventilator, Manufactured by Berger Brothers Company, Philadelphia, Pennsylvania.

In order that a ventilator may fulfill the purpose for which it is manufactured, it is highly essential that it exhaust all bad air and gases from the area which it is intended to ventilate. Therefore, the Earle's Improved Revolving Ventilator is made in a sufficient variety of sizes, namely eighteen, from five to sixty inches, to meet any reasonable range of requirements. It is constructed of galvanized iron and is said to be sturdily built by skilled workmen and subjected to exacting inspection before it is shipped from the factory of the manufacturers, Berger Brothers Company, 229-231 Arch Street, Philadelphia, Pennsylvania. Instructive literature, catalog, and price lists are at the disposal of interested dealers who take the pains to write for them.

The art of selling, as it is understood and practiced by progressive merchants of today, is an evolution from crude and primitive beginnings.

AUTOMATIC GAS SOLDERING FURNACE IS SAID TO BE ECONOMICAL.

When not actually in use for heating soldering irons, the "Automatic" Gas Soldering Furnace, made by George W. Diener Manufacturing Company, 400-416 Monticello Avenue, Chicago, Illinois, does not burn any gas, other than the almost negligible amount required to maintain the pilot light. This soldering furnace, shown in the illustration herewith, is described by the manufacturers as effecting a 50 per cent saving of the user's gas bills, because it automatically turns on the gas and lights it (from pilot light) when the soldering iron is placed on the forked rest and automatically shuts off the gas when the soldering iron is removed.



"Automatic" Gas Soldering Furnace, Made by George W. Diener Manufacturing Company, Chicago, Illinois.

A glance at the accompanying picture will show that the "Automatic" Gas Soldering Furnace is arranged to hold and heat two soldering irons at the same time. Each side is separately controlled. Hence, this soldering furnace is declared to be equally economical whether one or two soldering irons are used at the same time, or whether continuous soldering is done or only one soldering iron is used only occasionally. The reason for this is that no gas can be burned except by placing the soldering iron in the furnace. It is furthermore said that the cost of burning the pilot light all day is less than the value of the time wasted in turning on and off the ordinary furnace. Descriptive literature and price quotations will be sent by the manufacturers on request.

TINNING MILK CANS.

To American Artisan and Hardware Record:

I should like to obtain information regarding complete equipment for tinning milk cans and other articles, preferably by an electric process rather than by direct heat. Subscriber.

————, Minnesota, April 30, 1918.

FURNISHES POSITIVE VENTILATION INDEPENDENTLY OF DIFFERENCE OF TEMPERATURES.

In these days of conservation and economy the item of power bills for the operation of roof ventilators is a matter for serious consideration. Dealers and installers who want to keep in harmony with the spirit of the times and, therefore, gain the good will and patronage of the public would do well to investigate the merits of the Bicalky Roof Fan Ventilator in this respect. The manufacturers of this ventilator declare that it gives complete and satisfactory service without any expenses for maintenance and operation. In other words, there are no power bills to be paid after it has been installed.

Bicalky Roof Fan Ventilator, Made by Bicalky Fan Company, Buffalo, New York.

A noteworthy claim in behalf of this Bicalky Roof Fan Ventilator, shown in the accompanying illustration, is that it furnishes positive ventilation at all times independently of any difference of temperature for its action. This effect is achieved according to the makers, by a rotating fan wheel which creates a vacuum and causes an upward circulation of air under all conditions of weather. The construction is described as being thoroughly scientific in design. It is of such a character that the wind comes in contact with the outer veins of a secondary wheel. This is said to impart a powerful leverage to the inner wheel and thus enables the fan to be rotated by the moving outdoor currents of air. Interesting details and catalog can be had by addressing Bicalky Fan Company, Buffalo, New York.

NOTES AND QUERIES.

Faultless Warm Air Heater.

From Neuenfeldt Heating and Plumbing Company, Enderlin North Dakota.

Who manufactures the Faultless Warm Air Heater?

Ans.—Graff Furnace Company, 105 West 29th Street, New York City.

Repairs for Peerless Range.

From John F. Cartwright, 326 Main Street, Bowling Green, Kentucky.

Kindly let me know where I can obtain repairs for the Peerless Range.

Ans.—Northwestern Stove Repair Company, 654 West Twelfth Street, Chicago.

Mica Chips.

From H. F. Dallman, Clinton, Wisconsin.

Please advise where I can buy mica chips.

Ans.—Producers Mica Company, 225 East 22nd Street, Chicago; United States Mica Manufacturing Company, 14 East Jackson Boulevard, Chicago; and C. T. Warner, 906 South Bishop Street, Chicago.

Brass Strainer Wire.

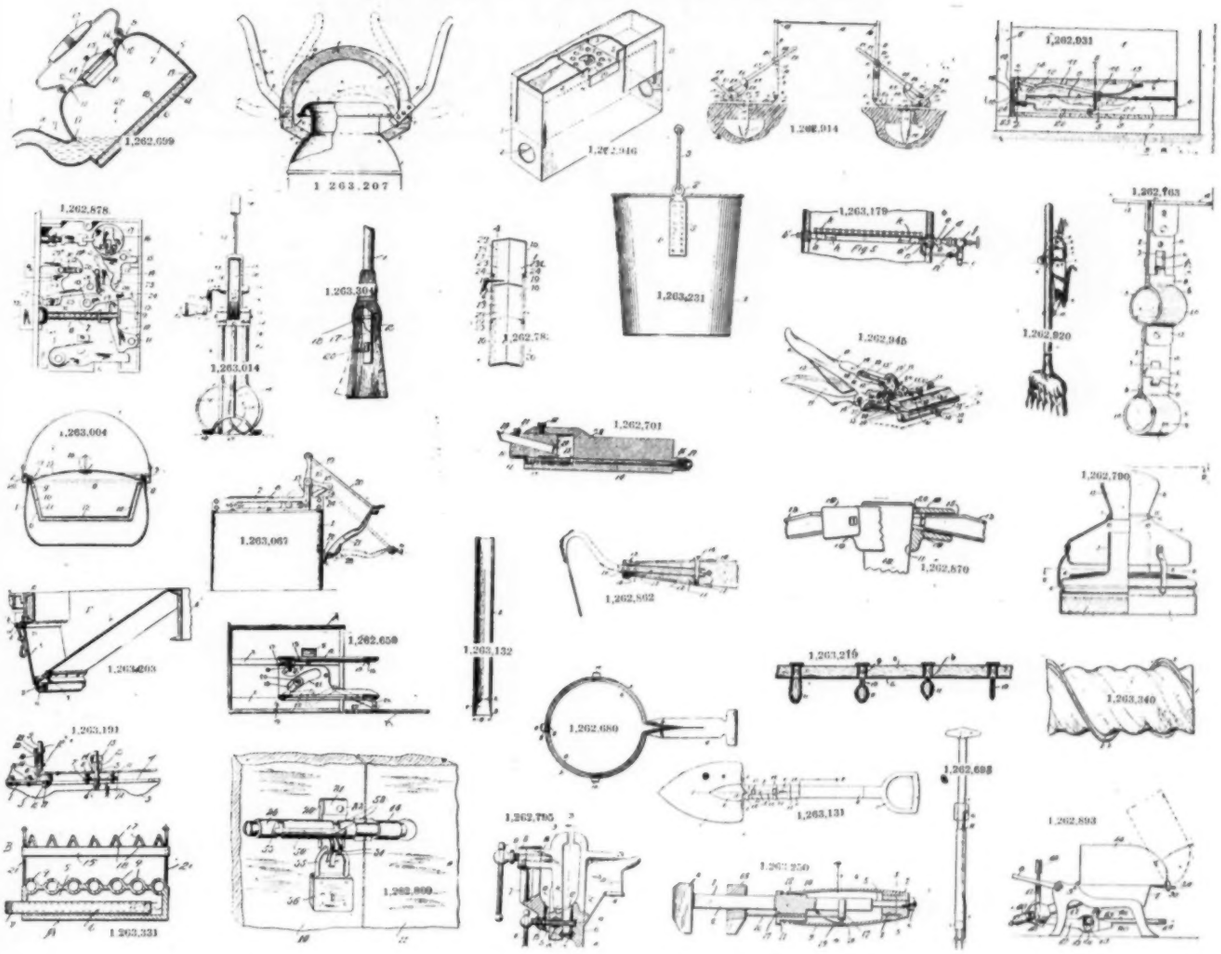
From J. H. Barnett's Sheet Metal Works, Dodge City, Kansas.

We would like to know where we can obtain Number 30 Brass Strainer Wire.

Ans.—Merchant and Evans Company, Kansas City, Missouri; and Clinton Wire Cloth Company, 111 West Washington Street, Chicago.

Had we lived, I should have a tale to tell of the hardihood, the endurance and the courage of my companions which would have stirred the hearts of every Englishman. These rough notes and our dead bodies must tell the story.—Captain Robert F. Scott.

NEW PATENTS.



1,262,659. Oven. Reuben W. Foster, Mankato, Minn. Filed Sept. 2, 1916.

1,262,680. Strainer. John Lawrence, New York, N. Y. Filed July 30, 1917.

1,262,693. Weed-Pulling Tool. Byron L. Page, Seattle, Wash. Filed Aug. 7, 1916.

1,262,699. Tea-Kettle. Lee G. Pultz, Red Hook, N. Y. Filed June 21, 1916.

1,262,701. Tool Holder. Joseph M. Riedy, Milwaukee, Wis. Filed Mar. 31, 1917.

1,262,763. Pipe Hanger. John W. Farley, Cleevland, Ohio. Filed July 16, 1917.

1,262,783. Hip Covering for Roofs. Edgar P. Guptill, Whitinsville, Mass. Filed Jan. 18, 1913.

1,262,790. Fly Trap. Paul M. Hengstenberg, Wilkinsburg, Pa. Filed Oct. 3, 1916.

1,262,795. Vise. John O. Holen, Denver, Colo. Filed June 6, 1917.

1,262,809. Lock. Andrew Kolody, Chicago, Ill., assignor of one-half to Joseph Demkowitch, Chicago, Ill. Filed Feb. 2, 1917.

1,262,862. Garden Tool Handle. Charles Staaff and John G. Janson, Convent, N. J. Filed July 5, 1917.

1,262,862. Pickax. Albert Reddle Thomson, Plantsville, Conn. Filed Nov. 17, 1917.

1,262,878. Lock. Henry G. Voight, New Britain, Conn., assignor to Sargeant & Company, New Haven, Conn. Filed Mar. 23, 1917.

1,262,893. Furnace. William T. Wilson, Chicago, Ill. Filed Oct. 16, 1916.

1,262,914. Clothes Line Stretcher and Support. Elgin B. Bertwell, Beaver City, Okla. Filed Aug. 31, 1916.

1,262,920. Broom Holder. Nicholas Chouvaldjy, Berkeley, Cal. Filed Nov. 14, 1917.

1,262,931. Weather Strip for Doors. James R. Dupen, Chico, Cal. Filed June 21, 1917.

1,262,945. Saw Sharpening Implement. Steven Hardy, New York, N. Y. Filed May 2, 1917.

1,262,946. Animal Trap. Thomas R. Harriman, Kansas City, Mo. Filed May 3, 1916.

1,263,004. Cooking Vessel. Olaf Tollagsen, Chicago, Ill. Filed Sept. 27, 1915.

1,263,014. Beater and Mixer. George E. Alexander, New York, N. Y. Filed Nov. 15, 1917.

1,263,067. Mop-Wringer. Stephen Kalisz and Ignac Spiradek, Chicago, Ill. Filed July 3, 1916.

1,263,131. Detachable Tool and Handle. William E. Seelye, Duluth, Minn., assignor to Seelye Tool Company, Duluth, Minn. Filed Aug. 9, 1917.

1,263,132. Fence Post. George C. Sharpe, Columbus, Ohio. Filed Sept. 1, 1916.

1,263,179. Fuel Igniter for Grates. Guy Ransome Williams, San Francisco, Cal. Filed Mar. 23, 1917.

1,263,191. Saw Set. Herbert P. Benner, Blaine, Wash. Filed May 6, 1916.

1,263,203. Hinge. Richard Webb Burnett, Chicago, Ill. Original application filed Aug. 30, 1912. Divided and this application filed May 28, 1915.

1,263,207. Can Opener. Joseph Edwin Chase, Schenectady, N. Y. Filed Apr. 24, 1917.

1,263,219. Seam Cleat for Sheet Roofing. Albert C. Fischer, Kansas City, Mo. Filed Dec. 12, 1916.

1,263,231. Pail. Anthony B. Greenfield, Regan, N. D. Filed Nov. 13, 1915.

1,263,250. Wrench. Cody B. Hunter, Micanopy, Fla. Filed May 31, 1917.

1,263,304. Sweeping Broom. John Henry Wolf, Cincinnati, Ohio. Filed Jan. 6, 1914.

1,263,331. Broiler. Oscar Emil Lindroth, Los Angeles, Cal. Filed June 12, 1917.

1,263,340. Spiral Sheet Metal Pipe. Thomas Silk, Martins Ferry, Ohio. Filed Dec. 27, 1915.

WEEKLY REPORT OF TRADE AND THE MARKETS

INCREASED URGENCY OF WAR NEEDS REDUCES SUPPLY OF STEEL FOR COMMERCIAL PURPOSES.

Upon representations of increasing urgency of war needs made by the Government, the steel interests have decided to curtail materially supplies available for commercial consumption. The mills' action also will affect deliveries, and domestic consumers who are unable to have the completion of their orders approved by the Government must wait.

The action by the makers is believed to have averted a crisis in the relations of the trade with the Government. In any event the trade has pledged itself to exert every means to bring the production of steel abreast of the current demands arising from the war. This means that the needs of the Allies also will be met.

Notwithstanding reports to the contrary, production is not running so high as has been generally believed, though more steel will be produced at the current rate than in 1916. But this production will not suffice, and in an effort to effect co-operation that will insure a maximum production of iron and steel, representatives of the trade were in conference several days last week. The result of the conference was the decision to set everything aside in favor of the war.

Warnings were sounded some time ago that there would in all likelihood be a shortage of steel for commercial consumption, but users not identified with the war failed to appreciate their importance until it was too late. Last week the demand from commercial consumers was insistent, but few orders were booked. The details of the control over non-essential production have not been made public, but the situation will be partly controlled by the priority arrangements which reserve the first call upon steel producers for the ship program. The trade itself will also exercise caution in accepting orders before they are approved by the Government.

More evidence developed which indicated that the trade had underestimated the demands that would be made upon it by the ship program. Plate shipments now exceed by several thousand tons the maximum capacity of the plate mills in 1916. The progress in shipbuilding under the fabrication system is marked. Charles M. Schwab, the new director-general of the Shipbuilding Corporation, declared frankly that the work was progressing at all points to his entire satisfaction. A statement like that from Mr. Schwab means that all expectations probably are being exceeded.

STEEL.

Steel companies have been able to increase output considerably in the last few months because of better transportation service and a larger supply of coal and coke. It is estimated that production today is at the rate of about 42,000,000 tons in ingots and 32,000,000 tons of rolled products a year. If this rate of activity can be continued during the balance of the year, steel companies can produce approximately 28,000,000 tons of crude steel and 22,000,000 tons of rolled steel products.

It is estimated in the trade that the requirements of the United States and its Allies will take up practically all of the production of crude and finished steel during the balance of this year, which will amount to approximately 22,000,000 tons in the next eight months, including 6,000,000 tons of steel shell bars and gun forgings, 4,000,000 tons of bars, plates and shapes for building ships, including 3,000,000 tons of plates and 1,000,000 tons of shapes, 4,300,000 tons of bars, plates, shapes and other forms of steel used in the manufacture of rails, cars and locomotives, 2,000,000 tons of plates and shapes—about half each—for structural work other than ships and railroad equipment, 1,600,000 tons of wire products, 2,000,000 tons of sheets and tin plate and 2,000,000 tons of pipe and miscellaneous steel.

It is expected that work will be concentrated largely upon steel for guns, shells, ships, cars and locomotives. The plain material furnished for these activities will cost approximately $200,000,000 and the total expenditure required for the manufacture of all government war munitions, including the above, will not be far from $3,000,000,000.

COPPER.

Small consuming interests have been solicited for several weeks to buy copper for future shipment, being confronted with the claim that higher prices will have to be paid after June 1st, but as another month must elapse before any change in price can possibly become effective and as the future outlook for commercial business is not encouraging, buying has not been stimulated by such representations which, in times of peace, have proved so effective.

The impression seems to be prevalent that the conference soon to be held in Washington between the producers and the War Industries Board will result in the fixed price for carloads and more being made 25c per pound. As a matter of fact, according to the Boston News Bureau, over 95 per cent of the American output can be very profitably produced at 23.50 cents per pound. While output just now is behind that of the same period a year ago the problem is not so much inability to produce at present selling price as it is one of efficient labor in sufficient quantity. One difficulty is with the refiners. Costs of refining copper have risen sharply in the past two years and many refineries today are treating copper on the basis of

contracts made three and four years ago, since which time, labor, supplies, fuel, etc., have more than doubled in price.

TIN.

While the rumors of an impending Dutch embargo on tin shipments from the Far East were overhanging the market last week the actual announcement by the Dutch Government took the trade completely by surprise. As the United States is depending for the bulk of its tin on the Dutch shipments, the embargo leaves the American market practically without supplies, as the small shipments from England and the incoming Bolivian tin are of small size, estimated at about 1,500 tons, against a monthly consumption of 5,000 tons. Conservation of all tin supplies will probably be taken under consideration by the Government and further reduction in consumption to absolute essentials is expected.

LEAD.

Report from Joplin, Missouri, showed a decline last week of $5 per ton on lead ores, bringing the base price for 80 per cent lead down to $80 or $1 per unit of lead in the ore. In the district as a whole, there has been a decrease of output. This is reflected in the market to an appreciable extent. In the St. Louis market lead is quoted dull and weak at 6.50 cents. In Chicago American pig lead was quoted the first of the month at 7.25 cents and bar lead at 7.75 cents.

BAR SOLDER.

There has been a stiffening of prices in the Chicago market on bar solder, as follows: Warranted 50-50, per pound 54 cents; Commercial 45-55, per pound 50½ cents; Plumbers', per pound 47 cents.

SPELTER.

Producers of high grade zinc ore, with the approval of the War Industries Board, have agreed to regulate production, and have consented to an allocation of smelter's orders in accordance with present producing operations. The primary object of this is to insure a sufficient supply of high grade ore for government sheet zinc requirements, and the secondary objects are to cut out the unnecessary production and incidentally establish the price of ore on a more profitable basis, and in closer harmony with the established price on sheet zinc. Under the influence of this action, the market is steady, East St. Louis delivery, spot, being quoted from 6.65 cents to 6.75 cents. Chicago prices for spelter in slabs remain steady at 7½ cents.

SHEETS.

The steadily intensifying pressure of war requirements makes it highly probable that commercial users will be unable to buy sheets in quantities approximating their needs. Deliveries to July 1st are well taken up; and priority rules are strongly in force in all parts of the country.

TIN PLATE.

The outstanding feature of the market is the problem of distribution of the product in such a manner as to cover the most urgent demands of the Government and to keep in mind the growing scarcity of tin. It is predicted that the filling of purely commercial orders for tin plate will soon be regulated down to the lowest possible minimum.

There is no prospect of the tin plate mills opening their books for second half contracts in the very near future. The Washington authorities are engaged in a fresh survey of the various uses of steel and a more comprehensive system of steel distribution will probably be laid down in the near future. Hitherto priorities have been given to little steel but that ordered directly on government account. Eventually the so-called "commercial" steel is likely to be parceled out in detail. While these plans are in the formative stage it is considered undesirable to attempt to allot contract tonnages of tin plate for the second half of the year. It must be remembered, furthermore, that while the tin plate price is $7.75, the price is set only to June 30th and any new price made at that time would control all deliveries made July 1st and later, against contracts made since December 29th.

Production has been substantially as large in April as in March, when it was computed to be 92 per cent of capacity. The final statement for April will not be available for some time yet. Shipments throughout April have been very heavy, very nearly eliminating the stocks at mills after the cleaning up that began in a modest way late in February. At the great majority of plants stocks are now down to practically normal proportions, normal stock being usually regarded as one week's production.

The mills do not count upon running at 100 per cent any time this year. That is always the objective and when everything runs smoothly operations of 96 to 98 per cent are not uncommon, but in these times that cannot be expected. There are always breakages and repairs are more difficult now than in ordinary times.

OLD METALS.

Market prices remain unchanged. Government prices are the maximum which anyone is allowed to pay, dealers' bid prices being made less. Wholesale quotations in the Chicago district, which may be considered nominal, are as follows: Old steel axles, $41.52; old iron axles, $41.52; steel springs, $30.36; Number 1 wrought iron, $30.36; Number 1 cast iron, $27.00 to $27.50, all net tons. Prices for non-ferrous metals are as follows, per pound: Light copper, 19 cents; light brass, 11¼ cents; lead, 5 cents; zinc, 4½ cents; cast aluminum, 20 cents.

PIG IRON.

With the furnaces fairly well sold for many months ahead, and with deliveries behindhand on most contracts, there is very little regular commercial tonnage available, and nearly all the sales are against government requirements.

The market remains quotable at the limits set by the Government. There is no hint of any shading of prices and apparently no likelihood that there will be any in the near future.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS.

PIG IRON

Basic	$32 00
Northern Fdy., No. 2	33 00
Southern Fdy., No. 2	37 50
Lake Sup. Charcoal	37 50
Malleable	33 50

FIRST QUALITY BRIGHT TIN PLATES.

		Per Box
IC	14x20	$16 20
IX	14x20	18 15
IXX	14x20	20 10
IXXX	14x20	21 55
IXXXX	14x20	23 00
IC	20x28	32 40
IX	20x28	36 30
IXX	20x28	40 20
IXXX	20x28	43 10
IXXXX	20x28	46 00

COKE PLATES.

Cokes, 180 lbs	20x28	$18 30
Cokes, 200 lbs	20x28	18 50
Cokes, 214 lbs	IC 20x28	18 90
Cokes, 270 lbs	IX 20x28	20 50

BLUE ANNEALED SHEETS.

No. 10 per 100 lbs.	$5 45
No. 12 per 100 lbs.	5 50
No. 14 per 100 lbs.	5 55
No. 16 per 100 lbs.	5 65

ONE PASS COLD ROLLED BLACK.

No. 18-20 per 100 lbs.	$6 25
No. 22-24 per 100 lbs.	6 30
No. 26 per 100 lbs.	6 35
No. 27 per 100 lbs.	6 40
No. 28 per 100 lbs.	6 45

GALVANIZED.

No. 16 per 100 lbs.	$6 95
No. 18-20 per 100 lbs.	7 10
No. 22-24 per 100 lbs.	7 25
No. 26 per 100 lbs.	7 40
No. 27 per 100 lbs.	7 50
No. 28 per 100 lbs.	7 70
No. 30 per 100 lbs.	8 20

POLISHED SHEET STEEL.

No. 24 per 100 lbs.	$9 80
No. 26 per 100 lbs.	9 85
No. 27 per 100 lbs.	9 90
No. 28 per 100 lbs.	10 00

SMOOTH SHEET STEEL.

	Per 100 lbs.
Wood's Smooth No. 20	$9 25
" " No. 22-24	9 30
" " No. 25-26	9 35
" " No. 27	9 40
" " No. 28	9 50

PATENT PLANISHED SHEET IRON.

Patent Planished Sheet Iron, 100 lbs., base No. 28 ..... $12 75

BAR SOLDER.

Warranted, 50-50 per lb.	54 c
Commercial, 45-55 "	50½c
Plumbers' "	47 c

SPELTER.

In Slabs 7½c

SHEET ZINC.

Cask lots	$22 00
Less than Cask lots	$22 50 to $23 00

COPPER.

Copper sheet, base 31½c

LEAD.

American Pig	$7 25
Bar	7 75

Sheet.

Full coils per 100 lbs.	$10 25
Cut coils per 100 lbs.	10 50

TIN.

Pig tin	Nominal
Bar tin	Nominal

HARDWARE.

ADZES.

Carpenters'.
Plumbs 15%

Coopers'.

Barton's	15%
White's	15%

Railroad.
Plumbs 20%

AMMUNITION.

Caps, Percussion—per 1,000.

F. L., Waterproof, 1-10s	32%
G. D	32%
Musket	32%

Shells, Loaded—

Loaded with Black Powder	32%
Loaded with Smokeless Powder, medium grades	32%
Loaded with Smokeless Powder, high grade	32%

Winchester:

Smokeless Repeater Grade	32%
Smokeless Leader Grade	32%
Black Powder	32%

U. M. C.

Nitro Club	32%
Arrow	32%
New Club	32%

Gun Wads—per 1000

Winchester 7-8 gauge	$2 25
" 9-10 gauge	1 94
" 11-28 gauge	1 63

Powder.	Each
DuPont's Sporting, kegs	11 25
" " ½ kegs	5 90
" " ¼ kegs	3 10
DuPont's Canisters, 1-lb	56
" " ½-lb	32
" " ¼-lb	22
" Smokeless drums	43 50
" " kegs	22 00
" " ½-kegs	11 25
" " ¼-kegs	5 75
" " canisters	1 00
L. & R. Orange, Extra Sporting kegs	11 25
L. & R. Orange, Extra Sporting ½-kegs	5 90
L. & R. Orange, Extra Sporting ¼-keg	1 30
L. & R. Orange, Extra Sporting lb. canisters	56
L. & R. Orange, Extra Sporting ½-lb. canisters	32
L. & R. Orange, Extra Sporting ¼-lb. canisters	22
Hercules "E. C." and "Infallible" 50 can drums	43 50
Hercules "E. C.," kegs	22 00
Hercules "E. C." ½-kegs	11 25
Hercules "Infallible," 25 can drums	22 00
Hercules "Infallible," 10 can drums	9 00
Hercules "E.C." ¼-kegs	5 75
Hercules "E.C." and "Infallible" canisters	1 00
Hercules W. A. .30 Cal. Rifle, canisters	1 25
Hercules Lightning Rifle, canisters	1 25
Hercules Sharpshooter Rifle, canisters	1 25
Hercules Unique Rifle, canisters	1 50
Hercules Bullseye Revolver, canisters	1 00

ANVILS.

Trenton, 70 to 80 lbs	9½c per lb.
Trenton, 81 to 150 lbs	9½c per lb.

ASBESTOS.

Board and Paper, up to 1/16"	17c per lb.
Thicker	18c per lb.

AUGERS.

Boring Machine	60%
Irwin's	Nets
Carpenter's Nut	50&10%

Hollow.

Bonney's per doz.	$30 00
Stearns, No. 3 " "	60 00

Post Hole.

Digwell, 8-inch per doz.	$12 50
Iwan's Post Hole and Well	Nets.
Vaughan's, 4 to 9-in. per doz.	10 25

Ship.

Ford's, with or without screw	15%
Snell's " " "	15%

AWLS.

Brad.

No. 3 Handled per doz.	$0 50
No. 1050 Handled "	1 05
Shouldered, assorted 1 to 4, per gro.	4 00
Patent asst'd, 1 to 4 "	85

Harness.

Common "	1 05
Patent "	1 00

Peg.

Shouldered "	1 60
Patent "	75

Scratch.

No. 1 handled per doz.	65
No. IS, socket han'ld. "	1 35
No. 7 Stanley "	1 95

AXES.

Boy's Handled.

Niagara "	9 25

Broad.

Plumbs, West, Pat	List
" Can. Pat	$53 00
" Firemen's (handled). per doz.	$19 00

Single Bitted (handled).

Warren Silver Steel	15 50
Warren Blue Finished	15 00
Matchless Red Pole	14 00

Single Bitted (without handles).

Warren Silver Steel	13 50
Warren Blue Finished	12 50
Matchless Red Pole	11 50

Double Bitted (without handles).

Warren's Natl. Blue, 3½ to 4½ lb: ..... per doz. 17 50

The above prices on axes of 3 to 4 lbs. are the base prices.
3½ to 4½ lbs. advance 25c.
4 to 5 lbs. advance 50c.
4½ to 5½ lbs. advance 75c.

BAGS, PAPER NAIL.

Pounds	10	16	20	25
Per 1,000	$5 00	6 50	7 50	9 00

BALANCES, SPRING.

Pelouze 20%

BARS, CROW.

Pinch or Wedge Point, per cwt. . $8 00

BASKETS.

Clothes.

Small Willow per doz.	10 00
Medium "	11 50
Large "	13 50

Galvanized Steel.	½ bu.	1 bu.	1½ bu.
Per doz	$8 00	$11 50	15 00

BEATERS.

Carpet.	Per doz.
No. 17 Tinned Spring Wire	$ 1 10
No. 18 Spring Wire coppered	1 40
No. 10 Preston	1 10

Egg.	Per doz.
No. 50 Imp. Dover	$ 1 10
No. 102 " " tinned	1 35
No. 150 " " hotel	2 10
No. 10 Heavy hotel tinned	2 10
No. 13 " " "	3 30
No. 15 " " "	3 60
No. 18 " " "	4 50

BELLOWS.

Blacksmiths' 40%

Hand.

	8	9	10	12
Per doz.	$8 00	9 00	10 00	12 75

Moulders'.
12-inch ..... Per doz. 15 00

BELLS.

Call.
3-inch Nickeled Rotary Bell, Bronzed base ..... per doz. $5 00

Cow.

High Grade	60%
Kentucky	35%

Door.	Per doz.
New Departure Automatic Rotary.	$7 50
3 -in. Old Copper Bell	5 00
3 -in. Old Copper Bell, fancy	7 00
3 -in. Nickeled Steel Bell	5 50
3½-in. Nickeled Steel Bell	6 00

Hand.

Hand Bells, polished	15%
White Metal	15%
Nickel Plated	10%
Swiss	15%
Silver Chime	10%

Miscellaneous.
Church and School, steel alloys . . 30%

Farm, lbs.	40	50	75	100
Each	$2 25	3 00	4 00	5 50

BEVELS, TEE

Stanley's, rosewood handle, new list	Nets
Stanley's iron handle	Nets

BINDING, OILCLOTH.

Zinced	60%
Brass	40&10%
Brass, plated	60&10%

BITS.

Auger.

Jenning's Pattern	50%
Ford's Car and Machine	15%
Ford's Ship	30%
Irwin	35%
Russell Jenning's	30%
Clark's Expansive	50&5%
Steer's " Small list, $22 00	25%
" " Large " $26 00	25%
Irwin Car	35&10%
Ford's Ship Auger pattern Car	15%

Center 10%

Countersink.

No. 18 Wheeler's	per doz.	$1 80
No. 20	"	"	2 40
American Snailhead	"	"	1 10
" Rose	"	"	1 30
" Flat	"	"	1 20
Mahew's Flat	"	"	1 00
" Snail	"	"	1 50

Dowell.
Russell Jennings 30%

Gimlet.

Standard Double Cut		25%
German Pattern	per doz.	$0 75
German	"	80
Gouge	"	80
Spoon	"	15%
Countersink	"	1 30

Reamer.

Jenning's Square	"	2 50
Standard Square	"	2 00
American Octagon	"	1 75

Screw Driver.

No. 7 Common	"	75
No. 1 Triumph	"	1 25